

Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 3 —CHART INFORMATION

SECTOR 3

NORTHWEST COAST OF AUSTRALIA—CAPE LONDONDERRY TO CAPE LEVEQUE

Plan.—This sector describes the NW coast of Australia from Cape Londonderry SW to Cape Leveque, and includes the offshore islands and dangers relative to their adjacent coastline. The outlying dangers, from Sahul Bank to Scott Reef, are described at the beginning of the sector, after General Remarks.

General Remarks

3.1 Winds—Weather.—The Northwest Monsoon becomes well-established over the area described in the sector by early in January, bringing clouds, rain and thunderstorms. Tropical depressions frequently occur during the period from December to April and vessels should be prepared for them.

The Southeast Monsoon is accompanied by fine weather, usually from May to September, but may reach force 5 to 7 over the open sea. A full description of the monsoon seasons is contained [paragraph 1.1](#).

Tropical storms, known as “Willy Willies,” in which the wind may reach hurricane velocity, affect the coastline during the summer season. A full description is contained in [paragraph 2.1](#).

Tides—Currents.—Because of the configuration of the coastal area between Cape Londonderry and Cape Leveque, and the restricting nature of the Timor Sea, the Indian Ocean tidal waves produce very large tides along this section of the Australian coast. Mean spring rises, as much as 10m, occur in some of the bays and sounds, although the average rises appear to be between 6 and 7m. Under such conditions, large apparent changes in hydrography and topography occur and caution is required.

The offshore currents in the region are highly variable. For further information, see [paragraph 1.1](#).

Aspect.—With the exception of King Sound and Yampi Sound, the bays, gulfs, and sounds included in this sector contain only anchorages for vessels with local knowledge. The numerous off-lying dangers, and the limited number of navigational aids throughout this area, make the approach to the coast difficult for large vessels, even in daylight.

Yampi Sound (16° 08'S., 123° 38'E.), described in [paragraph 3.60](#), contains facilities for loading ore, the berth being situated on the S side of Cookatoo Island. The ore piers can accommodate vessels up to 160,000 dwt, but no other facilities are available.

King Sound (16° 25'S., 123° 20'E.), described in [paragraph 3.76](#), contains the port of Derby, situated on the E side of the sound near its head. The harbor dries at low water, but tides up to 10m allow moderate size vessels to dock, where they then lay over on the soft mud bottom until the next high water.

Caution.—The coast between Cape Londonderry and Hall Point, about 190 miles SW, is very indented and should be approached with caution because of the numerous off-lying islets, rocks, and reefs, as well as the strength of the tidal

currents. In addition, certain portions of this coast have not been properly surveyed and some areas lie unsurveyed or only partly examined, requiring that when varying from the recommended tracks, the charts and sailing directions should be used with caution.

Oil exploration rigs and production platforms may be encountered off the NW coast of Australia and within the Timor Sea.

Sahul Banks—Outlying Islands and Dangers

3.2 The Sahul Banks consist of numerous shoals and banks of sand and coral rock extending ENE from the vicinity of 12° 45'S, 123° 30'E to 10° 05'S, 127° 25'E; so far as is known the depths over these shoals and banks range from 7 to 29.5m. The banks rise abruptly from the sea bed in positions generally near to the charted 200m curve, which runs approximately parallel to the S coast of Timor, and at an average distance of about 80 miles. The northwesternmost known shoal has a depth of 29.5m, coral, and lies 70 miles SE of Tandjung Oisina, the SW extremity of Timor. The bottom near these banks is generally coarse sand and broken shells, with white sand farther off. When clear of the banks, the bottom consists of green muddy sand. No breakers have been seen on the Sahul Banks, although it was stated to be dangerous in places.

The Sahul Banks and the area in their vicinity has only been partially surveyed and vessels navigating in the neighborhood should proceed with caution. A recommended track (122° - 302°) through North Sahul Passage (10° 10'S., 126° 50'E.) is indicated on the charts for passing NE of Sahul Banks.

Elang Terminal (10 52'S., 126 34'E.), consisting of a LANBY, is located within an area of oil wells and submerged pipelines that is best seen on the chart. An anchorage area lies 12.5 miles NE of the LANBY.

Laminaria Terminal (10° 37'S., 126° 00'E.), consisting of an SPM lying about 11.5 miles WNW of Elang Terminal, is located within an area of oil wells and submarine pipelines that is best seen on the chart.

Caution.—Between longitudes 125° 05'E and 127° 21'E, vessels not registered to the Republic of Indonesia are prohibited from entering waters within 12 miles of the S coast of Timor.

3.3 Dillon Shoal (11° 00'S., 125° 35'E.) has a depth of 13.1m and lies 17 miles SSW of Karmt Shoal. Between Dillon Shoal and Barton Shoal, 26.5 miles SW, there are several shoals and banks with depths of 18.3m or less; Barton Shoal has a least depth of 13.7m.

In 1936, a depth of 25.5m was reported about 75 miles ENE of Dillon Shoal; its position is approximate.

Other shoal areas, best seen on the chart, lie between Barton Shoal and **Mangola Shoal** (11° 40'S., 125° 07'E.), which has a least known depth of 9m and lies about 22 miles SW of Barton Shoal.

Pee Shoal (11° 45'S., 124° 50'E.), with a least known depth of 10.3m, lies 14.5 miles SW of Mangola Shoal. A number of other banks in the vicinity are best seen on the chart.

Fantome Bank (11° 38'S., 123° 57'E.) has a least known depth of 7.1m; a depth of 7.3m was reported 6.5 miles SSE of the charted position of Fantome Bank and an 18m patch lies 6 miles NE of the same position.

Vee Shoal (11° 50'S., 123° 49'E.) has a least known depth of 13.4m and lies 14 miles SW of Fantome Shoal. A number of banks, with depths of from 12.5 to 30.5m, lie about 20 miles between the bearings W and NNW from Vee Shoal; these banks have not been thoroughly examined.

3.4 Hibernia Reef (11° 59'S., 123° 21'E.), reported to lie 1.6 miles NW, is composed of coral and dries, with a drying sandbank near its E extremity. Extensive banks, with unexamined depths as shoal as 12.8m, lie between 5 and 30 miles N and NNE of Hibernia Reef.

Ashmore Reef (12° 15'S., 123° 03'E.), composed of coral and sand, with four low islets on it, and also several sandbanks which dry about 2.1m, lies 19 miles SW of Hibernia Reef.

Fresh water has been used from wells on all the islets, but in 1984 it was reported that all the wells were contaminated.

East and Middle Islets are each 3m high, sandy and covered with grass; the top of Middle Islet is depressed. There is a conspicuous tree on Middle Islet. West Islet is about 2.5m high.

There are depths of 7.9m 1.75 miles NNE and 25.5m 13.75 miles NE of West Islet. Marlin Bank, located 2.5 miles NNE of West Islet and extending 3 miles NE, has a least depth of 9.5m.

The S side of Ashmore Reef is an unbroken ridge of coral marked by heavy breakers, while its N edge is broken with four passages to the lagoons, of which only the W one was examined.

The W opening lies 2 miles NE of West Islet and leads into a lagoon where there are numerous detached reefs and coral heads, many of which have charted depths of less than 2m, in general depths of 10 to 25m.

A 9.1m shoal lies 6 miles N of East Islet; a 10.6m shoal lies 8 miles NE of East Islet.

Anchorage can be found anywhere along the N side of Ashmore Reef, in depths of from 31 to 46m at a distance of about 1 mile.

Tidal currents in the vicinity of Ashmore Reef set E on the flood and W on the ebb. In the vicinity of the entrance to the W lagoon, the current is reported to set SE on the flood and NW on the ebb. The effect is fairly local and rates of up to 4 knots are evident at springs.

3.5 Johnson Bank (12° 23'S., 123° 17'E.), 12.5 miles SE of East Islet, has not been closely examined. It has a least known depth of 8.5m, and a 10.7m patch lies 4.5 miles ESE of it; both are located on an extensive bank with depths of 20m and less.

Woodbine Bank (12° 24'S., 123° 30'E.), of sand and coral, with a least depth of 11.5m, lies 13 miles E of Johnson Bank. The 200m curve SW and SE of Woodbine Bank is marked by tide rips.

Cartier Islet (12° 32'S., 123° 33'E.), 1m high, lies 29 miles SE of Ashmore Reef, and is formed of sand and loose coral; the surrounding reef dries in places and is steep-to.

Mariners are warned that bombing exercises are conducted at Cartier Islet.

Pasco Passage (12° 28'S., 123° 32'E.), with depths of over 183m, lies N of Cartier Islet, at the S end of the charted 183m shelf extending S from Woodbine Bank.

In moderate weather the sea does not break on Cartier Islet Reef from 2 hours before to 2 hours after high water. As the current attains a rate of 1 knot, and its direction is uncertain, it presents a considerable danger to vessels, especially as soundings give no warning. A tide rip exists within the passage at position 12° 25'S, 123° 45'E.

The bottom between a distance of 10 and 20 miles NE of Cartier Islet is uneven and rocky, the soundings varying from 20 to 90m, but no dangers have been reported.

Anchorage, good in SE winds, can be obtained about 0.25 mile off the W extremity of Cartier Islet Reef, in a depth of 38m. Landing is possible from 2 hours before until 2 hours after high water if the wind is light.

Wave Governor Bank (12° 34'S., 123° 36'E.), with a depth of 33m, lies 3.5 miles SE of Cartier Islet. Barracouta Shoal, with a least known depth of 10.3m, lies 25.5 miles E of Wave Governor Bank; a detached 25.5m bank lies 8.5 miles NE of this shoal. An oil wellhead, marked by a lighted buoy, lies 23 miles NE of Barracouta Shoal; vessels are requested to pass at no less than 2.25 miles.

Vulcan Shoal (12° 48'S., 124° 17'E.), composed of live coral, with a least depth of 9.5m, lies 45 miles ESE of Cartier Islet, and it is steep-to. A 18.8m patch lies 7 miles SE of Vulcan Shoal. Eugene McDermott Shoal, with a least depth of 11.1m, lies 24 miles SE of Vulcan Shoal.

Osborn Passage, between Barracouta Shoal and Vulcan Shoal, lies near the entrance to one of the recommended tracks, indicated on the charts, approaching Port Darwin and Clarence Strait from W. The entrance to this track lies 11 miles SE of Cartier Islet.

3.6 Seringapatam Reef (13° 40'S., 122° 05'E.) encloses a lagoon. The reef dries and there are large boulders round its edges, with a few sandbanks, which dry about 1.8m, on its W side; it is steep-to on all sides. On a calm night the breakers on the reef were heard from a distance of 6 miles.

Scott Reefs (14° 00'S., 121° 53'E.), lying 15 miles SSW of Seringapatam Reef, consists of three separate coral reefs enclosing lagoons. North Reef encloses a lagoon and South Reef is crescent-shaped. Each reef is of considerable extent, almost dry, and has several above-water rocks on their outer edges.

Sandy Islet (14° 03'S., 121° 46'E.) lies on the central Scott Reef; this reef dries and extends from 0.5 to 1 mile from the islet. There is a conspicuous tower on the islet and also a boulder which dries 2.4m near its N end; a detached reef, which dries 0.6m, lies 1.5 miles NE of Sandy Islet.

East Hook and West Hook are the E and W extremities, respectively, of the N ends of South Reef. Between North Reef and South Reef there is a passage, about 1 mile wide, with depths of more than 366m; there is also a passage, with a depth

of 33m, between the reef surrounding Sandy Islet and West Hook.

A stranded wreck lies approximately 2.5 miles SW of Sandy Islet just off West Hook.

The lagoon enclosed by South Reef has depths of over 24m throughout the greater portion. The lagoon within North Reef has not been examined, but is apparently deep.

The depths are great around Scott Reef. The sea breaks heavily on the weather side, and at night the breakers may be heard from some distance; the lee side is quite smooth, but the tidal currents are strong, and caution is necessary when approaching the reef as soundings give no warning.

The recommended offshore track passes about 10 to 15 miles S of Scott Reef.

3.7 Jabiru Oil Terminal (11° 55'S., 125° 00'E.) ([World Port Index No. 54655](#)) is situated to the S of Sahul Banks and consists of a permanently-moored converted tanker.

Pilotage is compulsory; the pilot will transfer to an approaching vessel when it reaches a distance of 3 miles from the terminal. Off-taking vessels are moored in tandem with the terminal tanker and are required to keep their engines on stand-by.

Vessels up to 150,000 dwt are generally accommodated. Larger vessels may be accepted with prior permission. The terminal is located in deep water and there are no draft restrictions. However, in such case as a vessel being unable to moor on arrival and requiring to anchor, it should do so at least 5 miles from the terminal to avoid subsea production facilities.

Vessels should send their ETA 5 days, 72 hours, 48 hours, and 24 hours in advance. The 72-hour message should contain the following information:

1. Vessel name and call sign.
2. HF radiotelephone frequencies.
3. Inmarsat identification number and which satellite in use.
4. RT and WT frequencies.
5. Arrival draft and trim.

The terminal is equipped with VHF. Inbound vessels are advised by radio the approach bearing which they should steer when closing the terminal.

The limiting wave height for mooring is 2.2m. During the summer months, the area is subject to occasional cyclones. Particularly in January and February, inclement weather and sea states may delay mooring.

Challis Terminal (12° 07'S., 125° 01'E.), 11 miles S of Jabiru Oil Terminal, consists of a permanently-moored 115,000 dwt barge built as an off-loading facility.

The terminal is equipped with a radio direction finding beacon with a frequency of 404 kHz and range of 100 miles.

Anchorage, pilotage, and capacities are as listed for Jabiru Oil Terminal. Both terminals are equipped with a port radio.

Mainland Coast—Cape Londonderry to Cape Talbot

3.8 Cape Londonderry (13° 44'S., 126° 58'E.) is a low, rocky headland from which a drying reef extends nearly 5 miles NNW; the two Stewart Islets, about 6m high and sandy,

lie on the outer end of this reef and are surrounded by foul ground.

Two shoal bays indent the coast W of Cape Londonderry, but both are open to the NW and appear to be foul. Drying reef and foul ground extend right across the entrance to these bays, between Cape Londonderry and Cape Talbot, and up to 6 miles offshore.

Caution.—The sea N and W of Stewart Islets is often discolored and many tide rips are formed. Vessels should give this area a wide berth as uncharted dangers may exist.

Cape Talbot (13° 48'S., 126° 45'E.), about 13 miles WSW of Cape Londonderry, is low, sandy, and closely backed by trees and scrub. The extremity of the cape is difficult to distinguish from seaward because of its low-lying nature and the contour of the land to the E. The land behind the cape is thickly wooded and rises slightly with the tops of the trees reaching a height of about 18m.

A drying reef extends 4.5 miles NNE from Cape Talbot and Sandy Islet, 3m high, lies 3 miles NE of the cape; there is another islet 1.5 miles farther ENE. A spit, with a depth of 7.6m on its extremity, extends 3 miles NW of the cape and is marked by muddy patches during the strength of the tidal currents.

Napier Broome Bay

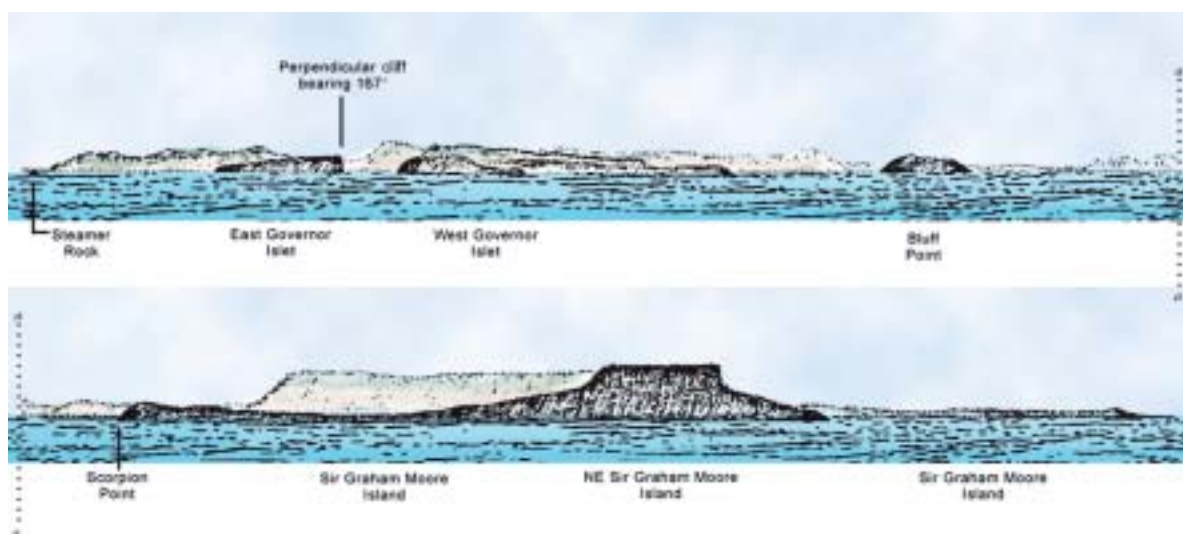
3.9 Napier Broome Bay (14° 00'S., 126° 47'E.) is entered between Cape Talbot and the NE extremity of Sir Graham Moore Islands, about 7.5 miles WSW. The shores of the bay are indented by four smaller bays separated by projecting points, between which sheltered anchorage can be taken; however, the approaches are somewhat encumbered by shoals and obstructions, and some local knowledge is recommended.

Sir Graham Moore Islands (13° 52'S., 126° 36'E.), two in number, lie on the W side of the entrance to Napier Broome Bay and are marked by a distinctive flat-topped summit, 61m high, located on the NE island and shaped like a truncated cone. In clear weather this is the first land sighted on the approach to the coast and from offshore the two islands appear as one.

Scorpion Point, the E extremity of the NE island, is 11m high and the extremity of a low neck of land; a detached drying reef lies about 0.5 mile NE of the N end of the island, and an obstruction was reported (1968) about 2.75 miles ESE of Scorpion Point. In 1986, depths of 0.3m and 4.9m were reported about 4 miles ESE and 3.75 miles E, respectively, of the point. The 0.3m shoal is marked by eddies when the current is running.

The SW and larger of the Sir Graham Moore Islands rises to a conspicuous bluff, 55m high, at its E extremity, which is joined to the W part of the island by a low wooded neck of land. The NW and W sides of the island have not been surveyed, but a mast is charted on the NW extremity.

Koojara Shoal (13° 47'S., 126° 35'E.), with a least depth of 0.8m about 4.5 miles NNW of the NE Sir Graham Moore Island, lies on the NE end of a reef which extends SW to the NW extremity of the larger Sir Graham Moore Island. The N



Entrance to Napier Broome Bay—View in two parts

end of this reef, about 0.5 mile NNW of the shoal, breaks in N winds; a depth of 0.8m lies about 1.5 miles SSE of the islet.

3.10 Anjo Point ($13^{\circ}57'S.$, $126^{\circ}35'E.$), the E extremity of Anjo Peninsula, lies on the W side of Napier Broome Bay, about 3 miles S of Sir Graham Moore Islands, with Geranium Bay between. The point, which is formed by a thin finger of land, is thickly wooded as is the peninsula SW, and forms a cove on its S side.

Carronade Islet, 12m high, lies 1.5 miles E of Anjo Point and is sandy and covered with small trees about 15m high; there is a conspicuous group of rocks on the E side of the islet.

Geranium Harbor ($13^{\circ}55'S.$, $126^{\circ}34'E.$), entered between the SE extremity of the Sir Graham Moore Islands and Carronade Island, is about 1.5 miles wide and 5 miles long with general depths of 13 to 20m, mud. The harbor provides sheltered anchorage for a number of vessels with local knowledge, but should only be approached from the E, as the S and W entrances are foul. The three small Geranium Islets lie on the N side of the harbor, off the narrow neck of land joining the E extremity of Sir Graham Moore Island to its main part. The outer islet is 12m high and the two inner islets are covered with mangroves.

Louis Islets ($14^{\circ}01'S.$, $126^{\circ}34'E.$), four in number, lie centered in an area fouled by rocks and a reef about 5 miles SW of Carronade Islet. The SE islet, known as Bird Islet, lies near the outer edge of the foul area, but shoal water extends nearly 1 mile farther to the E and S; large numbers of sea birds nest here. The inner islets are covered with trees about 12m high.

Mackenzie Anchorage ($14^{\circ}01'S.$, $126^{\circ}32'E.$), S of Louis Islets, is approached from a position about 1.5 miles S of Bird Rock, and affords good shelter in depths of 9 to 13m. The tidal currents are weak here, but caution is necessary on entering due to the shoal water S of Louis Islets and Pearl Shoal, with a depth of 1.8m, about 3 miles S of Bird Rock.

West Bay ($14^{\circ}05'S.$, $126^{\circ}29'E.$), entered between Guy Point, about 5 miles SSW of Louis Islets, and a point 2 miles NW, has not been completely surveyed but has a depth of 9.1m in its center. The shores are low and wooded, much of it covered with mangroves except in the beach areas; there is an old jetty charted at the W end of the bay. Vessels with local knowledge can enter West Bay and anchor in a depth of 7.3m, mud, near the W shore. The W side of the bay is shoal. In 1984, a depth of 2.7m was reported in the bay about 3 miles W of Guy Point.

Bluff Point ($14^{\circ}04'S.$, $126^{\circ}39'E.$), high and rocky, is an elongated point extending from the SE side of Napier Broome Bay which is closely backed by a hill rising to a height of 66m; this hill slopes gradually to the head of Mission Cove where it is low and covered with brush.

Caution.—Due to the existence of unexploded mines, a danger area with a radius of 1 mile is centered approximately 1 mile NE of Bluff Point.

3.11 Deep Bay ($14^{\circ}07'S.$, $126^{\circ}38'E.$), at the head of Napier Broome Bay, is entered between Guy and Bluff Points, but provides little anchorage as it is open to the N and shoal at its head. King Harman Point is located on the SW side of the bay and Pim Hill, 201m high, rises to a conspicuous bare summit about 2.5 miles SW of the point.

Mission Bay ($14^{\circ}06'S.$, $126^{\circ}42'E.$), entered between Bluff Point and Red Bluff, about 4.5 miles NE, provides some of the best shelter in Napier Broome Bay. Mission Cove, so named because of the abandoned mission near its head, lies at the S end of the bay and has a channel, with a depth of 8.2m, extending from the entrance to within 1 mile of its head. Depths shoal rapidly outside the channel and at the head of Mission Cove; caution is required. The E and SE shores of the cove are fairly clear of mangroves, but the remainder is thickly covered; the buildings of the old mission can be seen through the trees.

Anchorage.—There is good anchorage in the entrance to Mission Cove in a depth of 9.1m, about midway between the entrance points; anchorage is also available in the middle of the cove, NW of the mission station, in a depth of 8.2m.

Anchorage can be taken by vessels of moderate size in depths of 11 to 12m, mud, about 3 miles N of Bluff Point; anchorage is also available in depths of 14 to 16m about 3.5 miles ENE of Scorpion Point in the entrance to Napier Broome Bay.

Governor Islets (13° 56'S., 126° 42'E.), consisting of West Governor, the largest of the two, and East Governor, are located close together on the E side of Napier Broome Bay, about 2 miles NNW of the N extremity of Red Bluff. Both islands are foul and not completely examined, but the latter is marked by a conspicuous mass of wedge-shaped rock, the W side of which is perpendicular and especially noticeable when viewed from N. Both islets are lighter in contrast than the coast to the S.

Steamer Rock, 6m high, lies 2 mile NNE of East Governor Islet, and resembles a ship from a distance.

Directions.—Steer on a course of 190° for the 61m high flat-topped summit of the NE of the Sir Graham Moore Islands as soon as it is sighted. Alter course to 167° for the perpendicular cliff, which looks like a wedge-shaped mass of rock when viewed from N, located on the W side of East Governor Island, when it comes on that bearing.

When the NW extremity of Carronade Islet and Anjo Point, the E extremity of Anjo Peninsula, come into line on a bearing of 230°, steer on that bearing until the N point of the NE of the Sir Graham Moore Islands is abeam, when course can be altered to 203° for Mackenzie Anchorage or to 180° for Mission Bay, as desired.

Vansittart Bay

3.12 Vansittart Bay (14° 04'S., 126° 18'E.) is formed by an indentation of the coast about 20 miles W of Napier Broome Bay. It must be approached from E of Cape Bougainville, described below, and is available as an anchorage for ocean-going vessels; however, the bay is mostly unsurveyed and only partially examined, and local knowledge is strongly recommended.

Cape Bougainville (13° 53'S., 126° 06'E.), the N extremity of an extensive peninsula which separates Vansittart Bay from Admiralty Gulf, is 54m high and fringed with reef. Red Islet, 35m high, lies close off its E extremity and is fronted by red cliffs which are conspicuous when the sun is in a favorable position.

Caution.—For a distance of 50 miles from Cape Bougainville the water is so discolored and isolated rocks so numerous that it is highly probable uncharted dangers exist. Vessels having a draft of more than 3.7m should proceed cautiously at low water.

A shoal, with a least depth of 1.2m, lies about 4 miles W of the W extremity of Sir Graham Moore Island.

3.13 Approach to Vansittart Bay.—Jones Islet (13° 45'S., 126° 21'E.), 3m high, is sandy and surrounded by reef. It lies near the NW extremity of a large shoal area, known as the

Eclipse Archipelago, which uncovers in places, and extends up to 9 miles E and 14 miles S of the islet. Numerous rocks and dangers lie within this area, the exact limits of which are unknown in places.

Tait Bank (13° 45'S., 126° 15'E.), with a least depth of 7.3m, lies 6 miles W of Jones Islet and is best passed to the N and W.

Eclipse Islands (13° 54'S., 126° 19'E.), four in number and unsurveyed, lie surrounded by reef and rocks on the S end of Eclipse Archipelago. Long Island, the SE of the group, is rugged and consists mainly of masses of worn sandstone; Eclipse Hill, on an island close W of Long Island, rises to a flat-topped summit 86m high, and forms a good mark.

Mary Island (13° 59'S., 126° 23'E.), 3 miles SE of Long Island, is connected to the mainland E and S by reef. A drying reef extends 1 mile NW from the island and rocks and dangers extend nearly 2 miles SW from this reef. A bare rock, 6m high, lies on the reef 3.5 miles ENE of Mary Island, and an islet lies about 1.5 miles SE of the rock. Middle Rock, 0.6m high, lies midway between Mary Island and Long Island. There is an obstruction W of the rock. A boat passage is reported between the rock and the reef extending NW from Mary Island.

Vansittart Bay is entered between Mary Island and a point on Bougainville Peninsula, about 8 miles W. The E part of this peninsula is indented and mostly unsurveyed, but a 90m hill is charted on another point about 3 miles SE of Cape Bougainville.

Anchorage.—There is good anchorage in the middle of the entrance to Vansittart Bay in depths of 12.8 to 16.5m, mud, usually with a light to moderate breeze from sea. As stated before, the approach to this anchorage is unsurveyed and only partially examined, therefore, caution is necessary on entering.

Several small bays indent the W shore and the head of Vansittart Bay, but none have been properly surveyed and only small vessels with local knowledge should attempt to enter.

Jar Islet, to the W, and Low Islet lie near the head of Vansittart Bay, and there is a channel with depths of 13 to 15m between them.

Waratah Shoal, with a depth of 4m, lies on the E side of the entrance to this channel about 1 mile E of Jar Islet, and caution is required.

Anchorage.—Moderate size vessels with local knowledge can obtain anchorage in a depth of 15m about 1.25 miles N of Jar Islet; small vessels can anchor about 0.75 mile S of Low Islet in a depth 7.3 to 9m, mud.

Islands and Dangers North of Cape Bougainville

3.14 Islets, rocks, and reefs, with passages between, extend approximately 50 miles N from Cape Bougainville to the limits of Penguin Shoal. The depths throughout this area are very irregular, and the waters in the passages and over the deeps usually maintain a considerable amount of turbulence due to the tidal currents which run up to 3 knots in places.

Large vessels are recommended to only run the recommended tracks, which are charted about 4 miles N of Penguin Shoal, and never proceed into the waters S of this position. Vessels finding it necessary to enter the area should proceed at slow speed with caution, and at low water when

many of the dangers are visible; the tidal rise in this vicinity is as much as 6m.

The water color gives no indication of danger. Uneven ground is frequently marked by overfalls and eddies on the flood current of the Northwest Monsoon and by the ebb current during the Southeast Trade Winds.

Holothuria Banks (13° 51'S., 126° 00'E.), with depths of less than 37m, extend from 14 to 47 miles N of Cape Bougainville. They consist mainly of dead coral, covered with sponges, and are roughly divided by Penguin Deep, with depths of over 91m.

Penguin Shoal (13° 05'S., 125° 59'E.), composed of coral, has a least depth of 9.7m and lies off the N end of Holothuria Banks. It is the northernmost of the dangers extending from Cape Bougainville and has depths of 42 to 55m N of it.

Warn Rock (13° 09'S., 126° 06'E.), existence doubtful, with a least depth of 10.3m, is located on the N end of Holothuria Banks, about 8 miles ESE of Penguin Shoal.

Bassett-Smith Shoal (13° 18'S., 125° 45'E.), composed of coral, has a least depth of 4.8m and lies 19 miles SW of Penguin Shoal. It has been reported that the sea has not been seen to break over this shoal, and that there is nothing in the appearance of the water to indicate its position. All vessels are recommended to give it a wide berth. An 18m patch lies about 3 miles SW of this shoal.

Combe Rock (13° 25'S., 125° 55'E.), about 30 miles NNW of Cape Bougainville, lies on the W part of the S half of Holothuria Banks and dries up to 0.6m. Except in strong winds, it does not break when there is a depth of more than 1.8m; a rock, with a depth of 1.5m, lies 0.5 mile SW of Combe Rock.

East Holothuria Reef (13° 35'S., 126° 00'E.), which dries up to 3.7m in places, lies on the SE edge of Holothuria Banks, and covers an area about 10 miles long and up to 4 miles wide. A conspicuous rock, 0.6m high, is located on the N side of the reef, and a rock, awash at high water springs, lies on the E side.

West Holothuria Reef (13° 35'S., 125° 45'E.), which is reported to dry up to 2.1m, lies surrounded by foul ground on the SW edge of Holothuria Banks, about 28 miles NW of Cape Bougainville. This reef is seldom visible, as the tidal currents keep the waters in its vicinity most turbid.

East and West Holothuria Reefs are nearly connected by foul ground and drying patches which are dangerous to navigation. Vessels should never attempt to pass between these reefs.

Branch Banks (13° 38'S., 126° 12'E.) are two coral banks lying close together E of East Holothuria Reef; the N bank has a least depth of 10.3m, while the S has a least depth of 12.1m. A 15.9m patch lies about 4.5 miles N of Branch Banks.

Otway Bank (13° 40'S., 126° 04'E.), with a least depth of 3m, coral, lies off the SE end of East Holothuria Reef.

3.15 Troughton Islet (13° 45'S., 126° 09'E.), 9 miles NNE of Cape Bougainville, is 4m high and reddish in color. It is composed of ironstone, covered with grass, and is surrounded by a coral reef. Two prominent boulders, the largest 1.2m high, lie on the edge of the reef NE of the islet. A rock, which dries 1.5m, lies close off the S end of Troughton Islet. There is a landing place in an opening in the reef on the SW side of the islet.

A conspicuous white building stands on the islet. **Bishop Rocks** (13° 44'S., 126° 07'E.) consist of a small group of coral heads which dry 0.6m and lie 2 miles WNW of Troughton Islet. A reef, which dries 3.7m, lies about 0.75 mile ENE of Bishop Rocks, and shoals and foul ground extend intermittently for 8 miles NE of the reef.

Troughton Passage (13° 48'S., 126° 07'E.) leads E and S of Troughton Islet, with depths of 40m in the fairway. There are tide rips off the E and S extremities of the islet, and patches of mud and debris stirred up from the bottom sometimes have the appearance of coral reefs.

The channel between Troughton Islet and East Holothuria Reef is not recommended.

Van Cloon Shoal (12° 39'S., 126° 25'E.), with a least depth of 14.2m, lies about 38 miles NE of Penguin Shoal and 5 miles N of the recommended track. A heavy swell may build up over this shoal in strong N winds and vessels are cautioned to keep clear of it.

Baldwin Bank (12° 51'S., 126° 06'E.), with a least known depth of 15.5m, lies about 18 miles NE of Penguin Shoal and close N of the recommended track.

Gale Bank (12° 37'S., 126° 05'E.), with a least depth of 22m, lies 19 miles WNW of Van Cloon Shoal. There are depths of 37 to 55m within 2 miles of it.

Favell Bank (12° 42'S., 126° 09'E.), with a least depth of 22m, lies isolated about 7 miles SSE of Gale Bank. It is steep-to with depths of 55m within 1 mile of it.

Cape Bougainville to Gibson Point

3.16 The coast between **Cape Bougainville** (13° 54'S., 126° 05'E.) and Gibson Point, 9 miles SW, is heavily indented and forms several shoal bays. The land within rises to several flat-topped ridges from 40 to 130m high.

Hat Point (13° 56'S., 126° 01'E.), 5 miles WSW of Cape Bougainville, has an isolated hill on it, 42m high, which is easily identified from NE and SW. It is covered with brush and is the only good landmark in the vicinity.

The depths between Hat Point and the cape are very irregular with numerous tide rips over the outer part; a shoal bay between the points, provides shelter for small craft in S winds.

Landing in calm weather can be effected over the rock face on the W side of Hat Point, and also at high water on a beach on the SE side of the point.

Parry Harbor (13° 58'S., 126° 03'E.), entered between Hat Point and Gibson Point, about 4.5 miles SW, affords shelter to small vessels in all weathers. The bay is divided into two arms by a flat-topped, ridged peninsula, but the SW arm is shoal. A 10.3m patch lies in the entrance to the E arm, 1.75 miles S of Hat Point. Hecla Islet, 23m high, rocky, and covered with grass, lies 2 miles NE of Gibson Point and is fringed by drying reef except on its SE side. A patch of drying reef lies 1.75 miles NNE of Hecla Islet, and Fury Rock, awash at high water springs, lies 1.5 miles W of the islet.

Anchorage.—Make for Parry Harbor to pass 2 miles N of Fury Rock, then keep in mid-channel between the drying reef S of Hat Point and Hecla Islet and anchor as convenient in depths of 8 to 11m, mud, N of the peninsula.

Admiralty Gulf

3.17 Admiralty Gulf is entered between Gibson Point (14° 00'S., 125° 58'E.) and Cape Voltaire, 28 miles SW. Much of it has not been surveyed and the available information is old and should be used with caution. The gulf is approached from N through Troughton Passage and from W by the channels of the Institut Islands, which lie between Cape Voltaire and Long Reef.

The entire gulf, with the exception of its center part, is heavily encumbered by islets and shoals, and is abundant with fish.

Cape Voltaire (14° 15'S., 125° 34'E.), 45m high, is the NW extremity of a large peninsula which separates Admiralty Gulf from Montague Sound. There is a flat-topped hill, 123m high, about 2.75 miles ENE of the cape, and Sharp Peak, 145m high, rises 2.25 miles SSE of the cape. Krait Bay, with about 7.3m in its middle part, is entered about 2 miles NE of the cape.

Bigge Point (14° 17'S., 125° 44'E.), 9 miles E of Cape Voltaire, is fringed with above and below-water rocks which lie up to 1.25 miles offshore. The coast in this area has not been surveyed.

Long Reef (13° 55'S., 125° 45'E.), with its adjacent dangers, is centered about 23 miles NNE of Cape Voltaire, and extends for nearly 18 miles in a N-S direction. It forms the W side of the N approach to Admiralty Gulf and lies with its N extremity about 14.5 miles NW of Hat Point. The reef is composed of sand and coral, dries up to 3m, and is surmounted by Sand Islet, 1.3m high and covered with grass, about 3 miles S of its N end.

Rothery Reef, a detached coral reef surmounted by a sand cay which dries 6m, lies about 1.5 miles NNE of Long Reef. Submerged dangers, including rocks with depths of less than 1.8m, extend up to 6 miles N of Rothery Reef; these dangers do not break and due to the lack of visual contacts, especially at high water, the area between Long Reef and Holothuria Reefs is considered dangerous to navigate.

Low Rocks (14° 04'S., 125° 52'E.) are a group of white rocks, surrounded by drying reef, which lie 3 miles SE of the SE extremity of Long Reef. The highest part of these rocks, is a flat-topped boulder, 6m high, located on the SE and largest islet.

Tancred Bank, with a least depth of 3.3m, coral, lies 2 miles SE of Low Rocks.

Forrest Rock, with a least depth of 4.6m, coral, lies steep-to, with depths of over 22m close around, about 3 miles S of Low Rocks.

Cassini Island (13° 57'S., 125° 38'E.) lies 5 miles W of the W extremity of Long Reef. It is generally flat with a maximum elevation of 22m near the S end. Being composed of ironstone, it shows a light reddish color and has cliffs from 9 to 18m high along its shores, except at the N end, where the land slopes gradually to a rocky ledge awash at high water. The island is fringed by drying reef except for some beaches on the E side.

Anchorage can be found in 15m, sand and rock, in the entrance to a bay on the NE side of Cassini Island. There is a beach suitable for landing on the NW side of the bay and a fairly good landing place on the SE shore of the island.

Oliver Rock (13° 58'S., 125° 33'E.), a small coral head with a least depth of 2.7m, lies 4 miles WSW of Cassini Island. The

sea has not been seen to break over this rock and there is nothing in the appearance of the surrounding waters to indicate its presence.

Institut Islands

3.18 The Institut Islands are a group of islands, islets, and rocks lying between Cape Voltaire and Long Reef, in the W approach to Admiralty Gulf. The principal islands are Fenelon, Descartes, and Corneille, all inhabited; the larger islands are covered with stunted trees, and from all directions appear flat.

Condillac Islet (14° 06'S., 125° 33'E.), the westernmost island of the Institut group, lies about 9 miles N of Cape Voltaire, and has a table-topped summit 72m high. It is covered with bushes and has a rocky coast, except at its E extremity, which consists of a high sandy beach. A rock, 0.6m high, lies 0.1 mile NNE of the islet, and a 5.5m coral patch lies a little more than 0.5 mile N of the islet.

Randall Islet, 2.5 miles SE of Condillac Islet, is rocky, with a conspicuous hump 15m high near its S end. It is surrounded by coral reef which extends up to 0.5 mile to the N and E.

Baudin Islet, 1.75 miles NE of Randall Islet, is dark in color with a well defined summit 67m high. The NE extremity of the islet is separated by a low isthmus and appears as a second islet, close by, when viewed from the NW at a distance. The islet is fringed by a coral reef which dries, except on its SE side, where a sandy beach provides good landing.

Anchorage can be taken in depths of 18 to 25m, sand, 0.25 mile off the above sandy beach, with the S extremities of Condillac and Baudin Islets in line, bearing 295°.

Tidal currents in the vicinity of Baudin Islet set S and W on the flood, commencing about 20 minutes before low water. The ebb current sets N and E and commences about 2 hours before high water.

Pascal Islet (14° 04'S., 125° 39'E.), 4 miles NE of Baudin Islet, has a sharp conical peak, the summit of which consists of ironstone and attains a height of 38m. The island is surrounded by coral reef which extends 0.4 mile from its S side. A 1.4m shoal lies 0.5 mile S of the island.

Fenelon Island (14° 08'S., 125° 42'E.), the largest of the Institut Islands, is 104m high and lies 5.5 miles E of Baudin Islet. The island is 2 miles long in a N-S direction and surrounded by reef with a large drying patch isolated about 1.5 miles NE of its N extremity. Flat Islet, 26m high, lies close off the S extremity of Fenelon Island and is connected to it by a shoal spit.

Oyster Rock, small, dark, but whitened at its top by bird droppings, is located about 5 miles ENE of the N end of Fenelon Island, with Oliver Island and several rocks and reefs between. Lee Rock, a dangerous pinnacle with a depth of 0.9m, lies about 0.75 mile NNE of Oyster Rock and generally shows no sign except at low water springs when some slight tide rips are occasionally formed.

Descartes Island, 94m high, lies about 1.25 miles SW of Fenelon Island, and islets, rocks, and reef extend SW to Cape Voltaire. An islet, 17m high, is located 1 mile NW of Descartes Island, and Lavoisier Islet, 11m high, lies about 1 mile off the mainland 4 miles SW of Descartes Island.

Bullara Rock, with a depth of less than 1.8m, lies about 2 miles NW of Descartes Island, with reef extending to its S. It must be rounded to the N with care as no sign of it is usually visible.

Approach to Fenelon Passage

3.19 Corneille Island (14° 11'S., 125° 44'E.), 130m high and the highest of the Institut Group, lies about 2 miles SE of Flat Island and has foul ground extending 0.5 mile N from it. A reef, with a 5.5m high rock on it, extends the same distance SE. The tidal current close N of Corneille Island sets in a 060° direction at 1.5 knots on the flood.

Kingsmill Islands, consisting of two main islands with some rocks and a very shallow bar between them, lie close together on a bank of shoal water about 2 miles NE of Corneille Island. The W island is 9m high and the E island, known as Lafontaine Island, is long, narrow and 19m high. A 7.8m shoal lies 1.5 miles NE of Lafontaine Island.

Mushroom Rocks, one of which is 7m high, lie on a bank of shoal water within 1 mile NW of the W Kingsmill Island.

Lagrange Islet, 4m high, lies 2.5 miles SE of Corneille Island, on an extensive drying reef which surrounds the island to a distance of 1 mile off its shores. A shoal spit, with a depth of 1.2m, extends nearly 1.5 miles SW of Lagrange Islet, and several above-water rocks and another islet, 21m high, lie up to 2 miles SE.

Moliere Islet, 18m high, lies 3.5 miles ESE of Lagrange Islet. Patches of reef lie about 0.5 mile E and S of the islet, and a 4.9m shoal lies 2.25 miles ESE.

White Islet, Racine Islet, and Berthoud Islet lie 2 miles N, 1.5 miles S, and 3 miles SE, respectively, of Moliere Islet. In 1987, depths of 2.4m and 1.5m were reported to lie about 1.5 miles NW and 0.5 mile SSE, respectively, of Racine Islet.

Caution.—There can be lesser depths than charted in and among the Institut Islands.

3.20 There are three passages through the Institut Islands between Long Reef and Cape Voltaire, but caution must be exercised when navigating in their vicinity, especially at low water. The bottom is very irregular and the sea is heavily clouded with lime, which generally reduces visibility through the water to less than 1m. Since additional dangers other than those which are charted may exist, larger vessels are recommended to keep clear of the group.

Oyster Rock Passage (14° 02'S., 125° 46'E.) leads between Oyster Rock and Long Reef, however, it is fouled with Lee Rock and is not recommended without local knowledge.

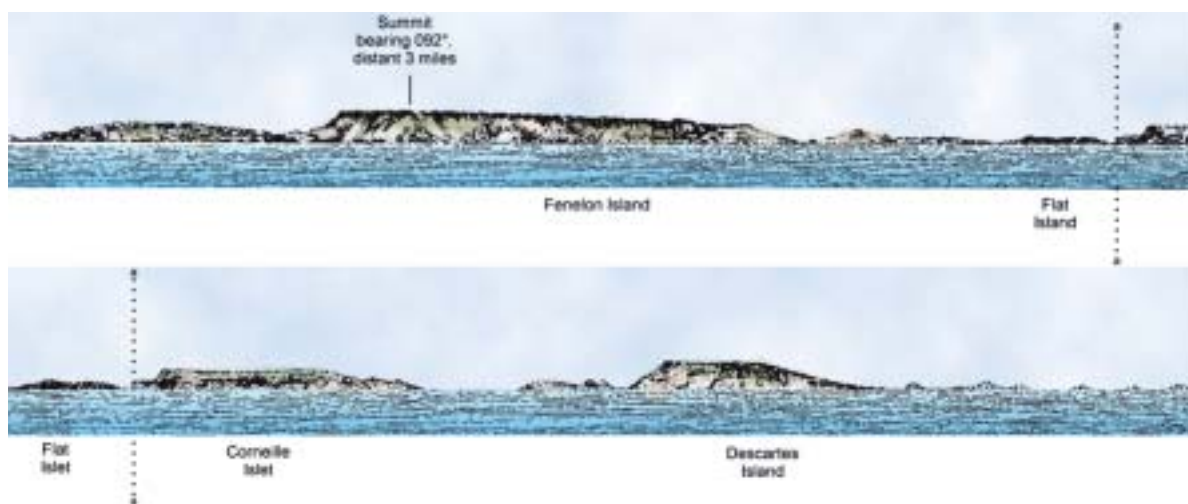
Fenelon Passage (14° 09'S., 125° 41'E.) leads between Fenelon and Descartes Islands. Vessels from W pass to the N of Baudin Island (14° 08'S., 125° 37'E.) and steer with the S end of Fenelon Island ahead bearing 119°, passing NNE of Bullara Rock. The line of bearing (157°) to the W end of Parry Islet (14° 19'S., 125° 46'E.) ahead, or 337° to Pascal Island astern, leads through Fenelon Passage passing between the 21m rock lying close off the SW extremity of Fenelon Island and the 7.9m shoal located 0.5 mile N of Descartes Island. A shoal, with a least depth of 5.3m, lies 0.6 mile SW of Corneille Island.

Voltaire Passage (14° 13'S., 135° 37'E.) leads between Dice Rock and the islets W of it, to the N, and Lavoisier Islet to the S. It is only recommended to small vessels with local knowledge. In 1987, a depth of 3m was reported close N of Lavoisier Islet.

Admiralty Gulf—West Side

3.21 Bigge Point (14° 17'S., 125° 44'E.), the NE extremity of a narrow peninsula located about 9 miles E of Cape Voltaire, is fringed by both above and below-water rocks up to 1.25 miles offshore. The coast both W and S of the point has not been surveyed, but is known to be rock with dangers extending up to 2.5 miles offshore in places.

Parry Islet, 18m high, lies 3 miles SE of Bigge Point with foul ground between. Several large rocks lie close SW of the islet.



Approach to Fenelon Passage—View in two parts

Walmesly Bay (14° 24'S., 125° 42'E.) is entered between Bigge Point and Pickering Point, about 8 miles S, but has not been surveyed. The shores appear low with several rocks offshore, and Mitchell River, with mangroves fringing its mouth, flows into the S part of its head.

There is a narrow peninsula, 3.5 miles SE of Pickering Point, which extends 2 miles NE from the coast. The bay formed between the above points is unsurveyed but appears shoal and foul with submerged rocks across its mouth and up to 1.5 miles off the extremity of the peninsula. A rock, which dries 3m, lies 0.5 mile E of the E extremity of the peninsula.

Crystal Head (14° 27'S., 125° 51'E.), a steep, rugged, flat-topped projection, covered with small trees and grass, is located about 6.5 miles SE of Pickering Point. Foul ground extends 1 mile NE of the head, and a detached reef, which dries 5.2m, lies about 0.5 mile farther in the same direction.

Anchorage can be found in about 7m, mud and clay, about 0.6 mile SSW of the SE extremity of Crystal Point.

Port Warrender (14° 31'S., 125° 52'E.), at the head of Admiralty Gulf, is a secure harbor which affords good anchorage in depths of 8 to 27m generally S to SE of Crystal Head. The land around the port area is rugged and rocky, and the hills on the W side, which rise up to 244m, are thickly covered with trees and grass.

The E side of Port Warrender is formed by a reef that extends up to 4 miles N from a point about 7 miles SSE of Crystal Head, and has two islets and several drying patches on it. The head of the port is shoal and foul from a position about 7.5 miles S of Crystal Head, and sand bars lie across the entrances of two rivers located at its S extremity.

Admiralty Gulf—East Side

3.22 The E side of Admiralty Gulf has not been surveyed and little is known of the depths up to 7 miles offshore in places. The coastal features hereabout are only approximately charted and should not be wholly depended on for navigation.

Borda Island (14° 14'S., 126° 01'E.), also known as North Osborne Island, is low and stony. It lies off the S entrance point of a large unsurveyed bay, the N entrance point of which is located about 6.5 miles SSE of **Gibson Point** (14° 00'S., 125° 58'E.). North Rock, an islet 1.75 miles NE of Borda Island, lies on foul ground which extends between the two, thence NE apparently across the entire head of the bay.

Osborne Islands, consisting of Middle Osborne Island, Southwest Osborne Island, Osborne Islands, and Steep Head Island, lie in a group centered about 7 miles SSW of Borda Island. Middle Osborne Island, the largest of the group, rises to a height of 216m near its center, and on its W coast has a bluff about 213m high.

West Rock, the westernmost of the Osborne Islands, is a large rock located about 3 miles W of the N extremity of Southwest Osborne Island; Center Rock lies midway between. The area E of West Rock has not been surveyed.

Steep Head Island, the southernmost of the Osborne group, is conspicuous because of its precipitous form. It lies about 1 mile S of an unnamed point on the coast about 3 miles SE of the S extremity of Southwest Osborne Island.

Moon Rock, which dries 2.4m and on which the sea seldom breaks when covered, lies about 1 mile off the above unnamed point and 1.5 miles NNW of Steep Head Island.

Mount Connor (14° 32'S., 126° 08'E.), the highest peak charted in the area, rises to a height of 587m about 11 miles SE of Steep Head Island.

Bonaparte Archipelago

3.23 Bonaparte Archipelago (15° 00'S., 125° 00'E.) comprises all of the islands, islets, rocks, and shoals lying off Montague Sound, York Sound, and Brunswick Bay, all of which are encumbered by islets, rocks, and shoals.

Tides—Currents.—The tidal rise along the coast within the Bonaparte Archipelago attains heights as great as 8.2m at mean springs and causes a considerable difference in the coastline and shoal areas between high and low waters. The tidal currents set through the narrower channels with considerable force and tide rips are common near some of the outer dangers.

Caution.—The waters within Bonaparte Archipelago and the coastal areas upon which it borders, are only partially surveyed and navigation requires a considerable amount of caution. Deep draft vessels are recommended to remain seaward of the archipelago and not proceed within 10 miles of the outer dangers except in case of emergency.

In 1985, the positions of the coastline and topographical features in Montague Sound, York Sound, and Brunswick Bay were reported to differ from those shown on land survey maps; inshore areas are generally unsurveyed.

3.24 Montague Sound (14° 25'S., 125° 25'E.) is the water area between the peninsula, of which Cape Voltaire (14° 15'S., 125° 34'E.) is the NW extremity, and Bigge Island, about 26 miles SW. The sound is encumbered with islets, rocks, and numerous dangers, and most of the off-lying islands are chiefly rock formations with a reddish tinge.

Montalivet Group (14° 18'S., 125° 16'E.), the outermost of the visible dangers in the approach to Montague Sound, consists of five principal islets and several rocks, all centered about 19 miles W of Cape Voltaire. They appear dark in color and are covered by undergrowth.

East Montalivet, the largest islet of the group, has a flat-topped summit 70m high, and lies on a reef with Patricia and Don Islets close NE, and Walker Islet 0.5 mile S. A sand cay, which dries about 6m, lies 1 mile NE of Patricia Islet and Wolf Rock, conspicuous at low water, dries 3m, about 4 miles ENE of the same islet.

West Montalivet Islet, located about 4 miles WSW of East Montalivet, is fringed by reef and has a dark flat-topped summit 76m high.

Anchorage.—Anchorage can be taken off the SE side of West Montalivet Islet in a depth of 12m; there is a sandy beach on this shore where landing can be effected.

3.25 Jamieson Reef (14° 04'S., 125° 21'E.), with depths of less than 4m, lies about 14 miles NNE of East Montalivet Islet. A sand cay, which dries 2.7m, lies on a coral patch located on the E side of this reef.

Ingram Reef (14° 07'S., 125° 17'E.), steep-to and about 1 mile in diameter, lies with its shallowest part, a coral reef

awash, about 6.5 miles SW of Jamieson Reef. The sea does not break on this reef until nearly low water springs, and before that time there is nothing in the appearance of the water to indicate danger.

Albert Reef (14° 15'S., 125° 10'E.) lies about 4 miles NW of West Montalivet Islet and dries 1.2m. Foul ground extends about 0.5 mile NW and S of the drying portion.

More or less to the S of a line drawn between Cape Voltaire and the N extremity of Bigge Island, there are a number of islets, rocks, and dangers located across the entrance to Montague Sound, only the most important of which are described below.

Water Islet (14° 21'S., 125° 30'E.), the E of the above islets, is 45m high, rugged, and light in color. On the SE coast there is a small sandy beach which affords good landing; a reef, awash, extends nearly 0.15 mile offshore from the NE side of the islet. In 1986, the island was reported to lie 0.5 mile W of its charted position.

Tancred Islet (14° 20'S., 125° 20'E.), about 5 miles W of Water Islet, is a conspicuous rugged islet with a light-colored and well defined summit about 45m high. It has two remarkable fissures crossing the surface in a NW-SE direction, and is steep all around.

Cleghorn Islet, about 1.5 miles S of Tancred Islet, is 61m high. Islets and rocks, some awash, lie up to 1.5 miles E and 4 miles S of Cleghorn Islet, but the area has not been surveyed and caution is advised.

Biddles Rock, 1.2m high, lies 2 miles N of Tancred Islet, and is steep-to with a depth of 31m all around it.

Hawick Islet, about 1.5 miles W of Tancred Islet, is rugged, light in color and 24m high. A reef, on which lie two small islets, extends about 0.35 mile N of Hawick Islet. There are depths of 7.3m close N of the reef.

Warn Islet, 29m high, lies about 3.5 miles W of Hawick Island and is round and rocky. About 0.1 mile from the E shore there is a rock about 0.6m high which is connected to the islet by a sunken reef. Shoal depths of 4m and 6m lie 1.25 miles S and 2.5 miles ESE of Warn Islet.

Clerk Islet, 11m high, lies 4 miles S of Warn Islet, with Bishop Islet, 19m high, about 1 mile SE of it. A reef extends 0.25 mile off the NE shore of the latter islet.

Prudhoe Islets (14° 25'S., 125° 15'E.), four in number, lie centered about 4.5 miles W of Clerk Islet. The largest of the group has a well-defined black summit, 85m high, but the N islet, which is surrounded by reef, is only 4m high. There is a chain of islets between this group and the NE coast of Bigge Island.

Branch Islet, 18m high, lies 1.25 miles SE of the larger Prudhoe Islet, and a 4m high islet lies between. Another small islet lies about 2.5 miles SE of Branch Islet.

Cotthurst Rock, 4m high, lies about 1.5 miles NNE of the N extremity of Bigge Island. There are depths in excess of 20m at a distance of 0.15 mile all around this rock. A shoal depth of 0.6m lies about 2 miles WNW of Cotthurst Rock.

3.26 The coast of Montague Sound between Cape Voltaire and the NE entrance point of Swift Bay, nearly 15 miles S, consists of small bays and rocky points, which are mostly unsurveyed from about 4 miles S of the cape.

An unnamed island lies close off the coast about 5.5 miles S of Cape Voltaire, and there is a channel between it and Water Islet, 4 miles W, which has depths of 13.7 to 18.3m leading to Swift Bay.

Katers Island (14° 28'S., 125° 32'E.), 105m high at its N end, lies 10 miles SSW of Cape Voltaire and forms the W side of the approach to Swift Bay. Between the SE extremity of the island and the N entrance to the bay, there is a channel about 1 mile wide with reported depths of 5.5 to 14.6m, which leads S to the entrance of the bay. Several islets and reefs lie off the W and NW sides of Katers Island.

Anchorage can be obtained by small vessels with local knowledge in a depth of 14.6m, mud, in the channel between Katers Island and the mainland. There is a more secure anchorage in Swift Bay, in depths of 7.3 to 12.8m, but these waters are unsurveyed and caution is required. Tides rise up to 6.4m at springs.

Wollaston Island (14° 30'S., 125° 28'E.), 189m high, lies 3 miles SW of Katers Island and is 3 miles long in a NW-SE direction. A reef, with depths of less than 1.8m, extends about 1 mile NW from the N extremity, and several rocks and islets lie off the NE side of the island. The island is separated from the mainland by a narrow rock-filled channel that should only be attempted by boats.

Mudge Bay (14° 33'S., 125° 23'E.), a deep indentation in the coast, is entered about 5 miles WSW of Wollaston Island, between a peninsula, 155m high on the W, and a point off which lie several islets, to the E. Depths in the bay vary from 7 to 18m, but surveys are incomplete and only small vessels with local knowledge should attempt to enter. A shoal patch of 0.5m was reported (1988) to lie in the middle of the entrance to the bay.

Combe Hill Islet, 119m high, along with several other high islets, lie in a line up to 2.5 miles N of the peninsula that forms the W side of Mudge Bay. In the bay itself there are several other islets and numerous rocks which dry up to 3m.

Capstan Islet (14° 35'S., 125° 16'E.), high and rocky, lies about 6 miles SW of the above peninsula, with several islets and rocks between. The coast within is rugged and rocky, with stunted trees and shrubs; it has not been examined, and the waters bordering it should be approached with great caution.

A rock, which covers at high water springs, is charted about 2 miles NE of the N extremity of Capstan Islet.

3.27 Bigge Island (14° 34'S., 125° 10'E.), which forms the W side of Montague Sound, is 14 miles long in a N-S direction and about 7 miles wide. It is rugged and barren with several irregularly-shaped hills, composed of quartzite tinged with oxide of iron, that maintain general heights of 61 to 91m.

Savage Hill, near the S extremity of the island, is table-topped and rises to a height of 143m; Camp Hill, near the W coast, is 125m in height, and Round Hill, dark in color, rises to 97m near the center of the island.

Numerous rocks are heaped up on Bigge Island, with deep fissures in nearly every direction. The coast is rugged and rocky, with occasional short sandy beaches, and on the NW side is Boomerang Bay, an indentation about 2 miles in length.

A chain of rocks and islets extends about 2.5 miles NE from a position on the shore about 2 miles SE of Cape Chateaufort, the N extremity of Bigge Island.

Scott Strait (14° 30'S., 125° 07'E.), the channel separating Bigge Island from the mainland SE, has not been thoroughly examined and is only navigable by vessels possessing local knowledge and exercising extreme caution. The SE shore of the strait is composed of broken rock and is fronted by numerous islets and dangers which reduce the width of the fairway to only 0.25 mile in places. The least charted depth in the channel is about 16.5m; however, the bottom is irregular and the tidal currents are strong, which causes the water to maintain a muddy character that obscures the numerous dangers.

The waters to the W and SW of Bigge Island are unsurveyed; several islands and dangers are known to exist hereabouts. The northernmost of these, known as Championet Islet, is rocky with a flat grassy summit 11m high. Eyre Rock, steep-to, dries 6m and lies 1 mile W of Championet Islet; both of the above are located in the entrance to Boomerang Bay. A shoal depth of 9.1m lies 2 miles WSW of Eyre Rock. Queen Islet, surrounded by reef and 40m high, lies 1.25 miles off the W side of Bigge Islet and 10 miles SW of Cape Chateaufort.

An islet, 14m high, with a reef extending 0.5 mile to its NNE, lies 0.75 mile NNW of Queen Islet. Tooth Rocks, a group of rocks from 3 to 5m high, lie about 4 miles WSW of the SW extremity of Bigge Islet. Breakers were reported in 1964, about 0.5 mile NW of Tooth Rocks, and a small islet lies midway between Bigge Island and these rocks. A submerged reef, with several above-water rocks on it, lies off the W end of Scott Strait and extends from 2 to 6 miles SSW of the S extremity of Bigge Island.

3.28 Maret Islets (14° 25'S., 124° 59'E.), two in number and connected by reef, lie centered about 11 miles W of Cape Chateaufort and rise to heights of 32m and 52m, the lower islet to the N.

Berthier Islet, about 2 miles S of the Maret Islets, with several high rocks between, rises to a height of 98m with a flat summit. This islet and the two Maret Islets extend over a distance of 9 miles in a N-S direction, and from seaward because of their increasing height to the S, give the general appearance of Cape Bougainville, the ridges being flat-topped and surmounted by an ironstone cap with stunted gum trees.

Corvisart Islet, 14m high, lies about 1.25 miles S of Berthier Islet; a drying reef is located about 0.75 mile ESE of the islet and a dangerous rock, with a depth of less than 1.8m, lies a little over 0.5 mile SSE of the same islet.

Combe Islet, with a height of 12m, is black and rocky, and lies about 2.5 miles E of the S Maret Island; reef extends about 0.4 mile W from the islet. Ripple Rock, which dries 3.7m, lies 1.5 miles SSW of Combe Islet.

Caution.—The banks and reefs in the vicinity of Maret and Berthier Islets are steep-to, and because of the strong tidal currents, the surrounding waters are usually turbid. Surveys in this area are incomplete and vessels navigating in this vicinity are recommended to exercise extreme caution.

Robroy Reefs (14° 27'S., 124° 52'E.) consist of three partially drying rocky patches centered about 7.5 miles W of the S Maret Islet. A sand cay on the N reef dries 4.3m.

Albert Islets (14° 32'S., 124° 55'E.), a group of five small islets, mostly connected by reef, lie centered about 5 miles SW

of the S Maret Islet. The largest islet, near the N end of the group, is 43m high; the S islet is known as Suffren Islet.

3.29 York Sound (14° 53'S., 125° 07'E.), which is entered between Cape Pond and Fontanes Islet, about 14 miles SW, forms the approach to Prince Frederick Harbor, situated about 19 miles within the entrance. The E side of the sound consists of two irregularly shaped bays, both unsurveyed, and the W side is only partially examined, therefore vessels are recommended to exercise a considerable amount of caution when entering.

Cape Pond (14° 45'S., 125° 08'E.), consisting of broken rock and fronted with dangers, forms the E entrance point of York Sound. Numerous rocks are situated close off the S shore of the cape and a rocky islet, with reef extending 1 mile off its S extremity, lies charted about 2.5 miles SSE.

Lamarck Islet (14° 47'S., 125° 02'E.), 58m high, lies in the entrance to York Sound, about 6 miles WSW of Cape Pond. The islet is fairly steep with reef generally bordering its shores, but there is good landing on the E side. Some islets and rocks, including Tournefort Islet, lie within 1.5 miles SSE of the S extremity of Lamarck Islet, however, the waters to the E are unsurveyed.

Jussieu Islet, low and fringed by reef, lies 5 miles NNW of Lamarck Islet. A spit, with a least depth of 0.9m, extends about 0.4 mile W from the N extremity of the islet.

3.30 Cape Torrens (15° 00'S., 125° 06'E.), a point of land in the SW part of York Sound, is the E extremity of a rugged peninsula which extends approximately 6 miles N from the mainland and terminates at its N end in Hardy Point. A reef, which dries 6.4m and on which the sea breaks, lies 5 miles NW of Cape Torrens.

Anderdon Islets (14° 56'S., 125° 09'E.), a group of rocks and islets, lie on the E side of York Sound about 5 miles NE of Cape Torrens. Reef extends approximately 1 mile W from the westernmost islet and the passages E and SE of the group are reported to be foul.

Prince Frederick Harbor (15° 05'S., 125° 16'E.), a continuation of York Sound, is entered between Cape Torrens and Anderdon Islets and forms a fairly good anchorage for vessels with local knowledge. The harbor is rather encumbered with rocks and islets and also several submerged dangers, but vessels can enter by passing midway between the N extremity of an island on the W side of the harbor, and the islets and dangers off the W extremity of the peninsula that lie SE of Anderdon Islets.

The head of Prince Frederick Harbor is divided into two inlets which lead NE and SE, respectively, from the E shore of the harbor; both inlets are unsurveyed. The S inlet, which leads to Roe River, is about 3 miles wide at its entrance with reported depths of 9.1 to 12.8m in the channel.

The coast of much of the harbor is backed by irregular ranges of steep, rocky hills, rising to several hills, the most prominent being Manning Peak, 15.5 miles E of Cape Torrens, and Mount Brookes, about 22 miles SE of the cape.

Anchorage.—Fair anchorage can be taken in the entrance of Prince Frederick Harbor in depths of 22 to 37m; however, the bottom is rock and caution is necessary.

Vessels with local knowledge can take anchorage in Prince Frederick Harbor about 0.5 mile SSW of an islet located 15 miles SE of Cape Torrens, in a depth of about 12m, good holding ground. Caution is necessary during the rainy season as the currents from Roe River are very strong.

3.31 Hardy Point (14° 59'S., 125° 01'E.), the W extremity of an irregularly shaped peninsula, is backed by a 91m conical hill about 0.75 mile ESE. Another hill, 135m high, rises about 1.5 miles SE of the point and is a good mark from seaward.

Ena Island, small and rocky, lies 1 mile NNE of Hardy Point and a drying reef, previously mentioned with Cape Torrens, lies 2.25 miles farther in the same direction.

Coronation Islands, centered about 5 miles W of Hardy Point, extend in a N-S direction for about 12 miles and consist of one large and several smaller islands, with numerous islets and rocks scattered around. They are covered with vegetation and the larger island is heavily wooded.

Fontanes Islet (14° 54'S., 124° 55'E.), 71m high and the northernmost of the Coronation Islands, lies 7 miles NW of Hardy Point. From this island, islets and reefs extend 2 miles SSE to a position about 0.75 mile E of Gale Island.

Gale Islet, 120m high, lies close off the N extremity of the largest of the Coronation Islands. The islet appears to be surrounded by dangers, but the waters in its vicinity are unsurveyed.

A chain of islets extends about 3 miles NNW of Gale Islet terminating in Desaix Islets, the latter being four in number.

The largest Coronation Island lies 5 miles W of Hardy Point and has two conspicuous peaked hills, the highest near the middle of the E coast, rising to a height of 151m. The coast is irregular in shape forming two shallow bays along its SE part; a reef which dries 0.6m lies 0.25 mile offshore, about 1 mile SSE of the N extremity of the island.

3.32 Port Nelson (15° 04'S., 125° 00'E.), entered between Hardy Point and Fontanes Islet, forms a secure anchorage area on the W side of the promontory which separates it from Prince Frederick Harbor. The port is protected from W winds by the Coronation Islands and extends about 8 miles S from Hardy Point, gradually shoaling towards its head where it forms two inner bays.

The W entrance to Port Nelson, between the S extremity of the Coronation Islands and the mainland coast, is narrow and not fully examined. It is available to small vessels with local knowledge proceeding to and from Brunswick Bay.

The general coastline of the port is rugged and steep with numerous small bays, the lower shores of which are lined with mangroves.

Careening Bay (15° 06'S., 125° 00'E.), entered between a point 6.5 miles S of Hardy Point and another point 1 mile SW, has depths of about 3.7m in its middle part, but shoals to a sandy beach which provides good landing for boats. A drying reef lies 0.5 mile N of the E entrance point of Careening Bay and caution is advised when approaching.

Anchorage.—Good anchorage can be taken, according to draft, nearly anywhere in Port Nelson; the nature of the bottom almost everywhere is mud. The best anchorage area appears to be from 1 to 1.5 miles NW of the head of Careening Bay in depths of 9 to 11m.

Caution.—Tidal rises are in excess of 9.1m. Care is necessary not to anchor over shoal areas at HW.

3.33 Colbert Islet (14° 52'S., 124° 43'E.), 46m high, lies 12 miles W of Fontanes Islet, the N extremity of the Coronation Islands. Foul ground, with above and below-water dangers, extends up to 2 miles N and 1.5 miles S from the islet; another islet surrounded by drying reef lies about 2 miles to the E.

Buffon Island, 73m high, lies 3 miles SSE of Colbert Islet; two islets close together are located off its SE extremity, and two rocks lie off the NW point of the island.

Keraudren Island, 49m high, lies about 2.5 miles WSW of Buffon Island, with several islets scattered off its N end. A narrow reef, which dries 2.4m, extends from about 1 to 2.75 miles NNW of Keraudren Island, and depths of less than 11m extend up to 1 mile SW of this reef. A reef extends 0.5 mile SE and a shoal, which breaks, extends SW from the S point of the islet close W of Keraudren Island. Rocks, which dry, lie 2 miles W and 2.5 miles SW of the summit of Keraudren Island.

De Freycinet Islet (14° 49'S., 124° 32'E.), 26m high, lies about 9.5 miles WSW of Keraudren Island and is easily identified because of its resemblance to an inverted basin. A reef, which covers at high water, lies about 1.5 miles ENE of the islet. A small islet, 14m high, lies 2 miles E of De Freycinet Islet.

All of the above islands and islets lie in the approach to Brunswick Bay.

3.34 Brunswick Bay (15° 10'S., 124° 40'E.), a large open bay formed between the W side of the Coronation Islands (15° 00'S., 124° 56'E.) and the E side of Augustus Island, about 25 miles SW, has an irregular coastline and is encumbered with numerous islets and dangers. The bay forms the approach to St. George Basin, Prince Regent River, and Port George IV, and is stated to be frequented by small vessels with local knowledge. Brunswick Bay has not been closely examined throughout and in many places soundings are scanty, requiring considerable caution when entering.

Cape Brewster (15° 06'S., 124° 54'E.), located in the NE part of Brunswick Bay, is steep, rocky, and thickly covered with brush. Bat Islet, located close off the cape, consists of a mass of sandstone which is connected to the cape by a narrow ridge of rocks. The cape and the islet are similar in appearance, both being rocky and barren.

Cape Wellington (15° 10'S., 124° 50'E.), about 5.5 miles SW of Cape Brewster, terminates in a narrow point fringed with foul ground. The shore S of the cape terminates in a second point about 1 mile SSW and then trends NE to form an irregular peninsula. Several islets surrounded by foul ground lie centered about 4 miles SW of Cape Wellington; at half-ebb strong tide rips have been observed E of these islets. A dangerous rock, with a depth of less than 1.8m, lies about 5 miles WSW of the cape; another dangerous rock, reported in 1987, lies about 3 miles WNW of the cape.

High Bluff (15° 16'S., 124° 41'E.), 10 miles WSW of Cape Wellington, is formed of perpendicular cliffs about 76m high. It is located at the NW extremity of an irregularly shaped peninsula which separates Hanover Bay from Port George IV, to the S. There is a low rocky point about 1.5 miles E of High Bluff which forms the W entrance point of Hanover Bay.

Adieu Point (15° 15'S., 124° 35'E.), the N extremity of Augustus Island, is a table-topped, rocky bluff about 61m high, which appears as two humps from seaward. A chain of islets and reefs, terminating in Lucus Islet, extends 4.5 miles NW from the point.

3.35 Islands and dangers in Brunswick Bay.—Desfontaines Island (15° 02'S., 124° 50'E.), 30m high, lies 6 miles NW of Cape Brewster with several islets off its W shore, and Low Rock lies about 2.5 miles to the ESE. An unnamed island, 52m high, lies 3 miles NNW of Desfontaines Island and there are several small islets in the vicinity of the unnamed island.

Bernouilli Island (15° 02'S., 124° 45'E.), 60m high, lies about 4.5 miles W of Desfontaines Island and has several islets off its NE and W shores. A dangerous rock, with a depth of less than 1.8m, lies about 2 miles ENE of the island.

D'Arcole Islands (15° 08'S., 124° 35'E.), centered about 10 miles WSW of Bernouilli Island, lie scattered over an area about 10 miles square, with Forbin Island at the E extremity, Commerson and Jackson Islands to the S, Browne Island, Rocky Islands, and Duguesclin Island to the W, and three isolated rocks to the N. The highest of the group is Duguesclin Island at 41m. The S islands appear to be surrounded by foul ground, but the entire area has not been completely examined.

White Islet (15° 14'S., 124° 19'E.), about 18.5 miles NW of Adieu Point, is 9m high and covered with white guano. It lies on a reef about 2 miles long, which dries 5m at its N end and has a depth of 3.7m at its S end.

A 3.6m shoal lies 6.5 miles ENE of White Island and a 6.1m patch is situated about the same distance to the NE.

3.36 The Prince Regent River (15° 16'S., 124° 51'E.), entered about 5 miles S of Cape Wellington, at the head of Brunswick Bay, is available to small vessels with local knowledge. The entrance channel, which is approached E of the islets SW of Cape Wellington, is deep, but becomes narrow and somewhat tortuous with reefs fringing the numerous islets within, thus reducing the fairway to a width of about 0.25 mile in places.

Tidal currents vary with the width of the channel, but reach 7 knots in the narrow parts during springs.

St. George Basin (15° 24'S., 124° 01'E.), roughly 10 miles in diameter, lies about 11 miles within the entrance to the Prince Regent River and provides good shelter to vessels able to enter. Several islets and rocks lie in the N part of the basin, the largest being St. Andrews Island, and on the NE shore there are two conspicuous hills of fort-like appearance.

The upper reaches of the Prince Regent River, from the SE end of St. George Basin, runs straight in a SE direction for about 14 miles between rocky hills rising up to 120m. Although depths in the fairway are reported to be from 7.3 to 14.6m, numerous islets and dangers border the channel and local knowledge is necessary. The river continues for about 50 miles into the interior, but is winding and shoal in its upper part.

Anchorage.—St. George Basin appears to be deep, however, the E and S shores have not been closely examined. There is no extensive anchorage until above St. Andrew Island, where a

vessel with local knowledge can secure in depths of 5.5 to 25m between the NW shore and the above islands, out of the strength of the tidal currents.

3.37 Hanover Bay (15° 17'S., 124° 46'E.) is entered between High Bluff and the W extremity of the reef extending from the islets SW of Cape Wellington. The E side of the bay is formed by Uwins Island, lying in the entrance to Prince Regent River, and the W side by the peninsula of which High Bluff is the N extremity.

Anchorage.—Good anchorage in depths of 14 to 22m, excellent holding ground, can be taken nearly anywhere in Hanover Bay. The anchorage is reported safe except in strong NNW winds. Vessels usually approach from the N just E of the islets about 3 miles NE of High Bluff.

Port George IV (15° 22'S., 124° 39'E.), entered between High Bluff and Adieu Point, extends about 14 miles S and terminates in Augustus Water, a narrow inlet at its head. Although the harbor affords good anchorage and excellent shelter, the approaches are somewhat encumbered with dangers which in places have not been surveyed. It is recommended that only vessels with local knowledge attempt this anchorage and then only in daylight.

Entrance Island (15° 17'S., 124° 37'E.) lies in the middle of the entrance to Port George IV and is conspicuous due to the light-colored, reddish cliffs, 60m high, at its NE extremity. A dangerous patch, which dries, lies about 2 miles NE of the island and Hummock Island, so named for its shape, is located about 2 miles to the S of Entrance Island.

Depths—Limitations.—The channel E of Entrance Island is wide, deep, and except for the drying patch NE of the island, clear of dangers. The light, reddish cliffs on the NE extremity of Entrance Island, form a good mark for making this channel and vessels would best approach it on a SSE heading.

The channel W of Entrance Island is encumbered with reef and rocks, but there is a narrow intricate fairway SE of Adieu Point which can be taken by small vessels with extensive local knowledge.

Anchorage.—Vessels with local knowledge can take anchorage in depths of 16 to 18m, mud, between Entrance and Hummock Islands. Anchorage is also available in a depth of 18.3m, mud about 1 mile E of Hummock Island.

Directions.—Vessels proceeding to Port George IV generally approach from the W by proceeding 3 miles S of White Island and thence steering to a position 2 miles SW of the SW end of Browne Island, in order to avoid the reefs NE of **Vulcan Island** (15° 14'S., 124° 23'E.). Course is then altered for High Bluff, bearing 116°, until the cliffs on the NE extremity of Entrance Island bear SSE, when a heading for the E channel may be taken.

Navigation above Hummock Island requires extensive local knowledge due to the limited surveys of the area.

3.38 Augustus Island (15° 21'S., 124° 33'E.) is high, rocky, and mostly covered with stunted trees and scrub. From its N extremity, **Adieu Point** (15° 15'S., 124° 35'E.), the E coast of the island forms the W side of the Port George IV, and is high and rocky with numerous islets and rocks close offshore. The W shore of the island is very irregular with several bays and

inlets, but it is unsurveyed with numerous rocks and islets lying off most of its various points.

Rogers Strait separates the SE coast of Augustus Island from the mainland, but is encumbered with islets, rocks and shoals. It is used primarily by small vessels with local knowledge which find sheltered anchorage in the bay area SW of Brecknock Islets, the western of the two largest islets in the strait.

Wildcat Reefs (15° 17'S., 124° 08'E.), two drying reefs about 1.5 miles apart in an E-W direction, each with a head that dries from 7 to 7.6m, lie between 23 and 28 miles W of Adieu Point. A shoal, with a depth of 7.3m, lies about 2 miles NNW of the middle of the W reef. Drying rocks lie up to 1.25 miles S of the reef.

Red Island (15° 13'S., 124° 15'E.), 35m high, lies about 6 miles NE of the NE extremity of Wildcat Reefs and is a rounded mass of dark red sandstone with low perpendicular cliffs. There is a little stunted vegetation on the summit. A reef, which dries 0.3m, lies about 0.5 mile W of Red Islet.

Violet Shoal, with a depth of 0.6m, lies 2 miles NW of Red Islet. Orange Shoal, with a depth of 1.5m, lies 1.5 miles NNE of the islet.

Osborn Reefs (15° 09'S., 124° 12'E.), consisting of two reefs 1 mile apart, lie about 5 miles NW of Red Islet. The N reef dries 0.6m; the S reef 0.3m.

3.39 Rainbow Shoals extend from 1.25 to 3.5 miles SSW of Red Islet and consist of a chain of reefs, one of which dries 7m. A shoal, with a depth of 10.1m, lies midway between the S end of these reefs and the N extremity of Champagny Island, about 3 miles ESE.

Champagny Islands (15° 09'S., 124° 14'E.), consisting of the main island of that name together with the islets and rocks surrounding it, and Degerando Island, 2 miles SW, lie on a bank of foul ground centered about 20 miles WSW of Adieu Point. Champagny Island is 53m high near its NE end and appears as a light-colored rocky formation thickly covered with scrub. The small islets NE, S, and SW of it are similar in appearance.

Degerando Island is 32m high and lies on the end of the reef extending SW from Champagny Island; the island is surrounded with foul ground. Two islets lie off the E extremity of Degerando Island, and a reef, which dries 6m, lies close off the W extremity; a rock, with a depth of less than 1.8m, lies close N of the reef. A reef which dries 1.8m lies about 2.75 miles SE of Degerando Island.

Degerando Light (15° 20'S., 124° 11'E.) is shown from a white round metal hut on the W end of the island.

Caution.—The passage between Champagny Islands and Wildcat Reefs has a least charted depth of 9.1m, however, the E approach between Vulcan Islets and Red Islet has not been closely examined and caution is advised.

3.40 Heywood Islands (15° 20'S., 124° 23'E.), three in number with numerous surrounding islets, rocks, and reefs, lie centered about 6 miles E of Champagny Islands, and are separated from the latter by a strait which has been inadequately surveyed. Drying patches and other dangers extend SE from Degerando Island into the strait and vessels

without extensive local knowledge are not recommended to attempt it.

Tidal currents during the falling tide have been observed in the above strait at a rate of 6 knots, and strong rips and eddies have been seen near its S end where the bottom is uneven and the general area unsurveyed.

Byam Martin Island (15° 24'S., 124° 21'E.), the S of the Heywood Islands, rises to a height of 67m near its N end; the waters around it are unsurveyed.

Vulcan Islets (15° 14'S., 124° 23'E.), the largest of which attains a height of 88m, lie about 3.5 miles WNW of the N extremity of the Heywood Islands. Reefs have been reported to extend up to 5 miles NNE and 3 miles NE of the main islet, and others lie between the group and Adieu Point.

Caution.—In 1984, Vulcan Islets were reported to lie 1.25 miles ESE of their charted positions.

Camden Sound to King Sound

3.41 Camden Sound (15° 26'S., 124° 24'E.) is bounded on the N and NE by the islands of the Bonaparte Archipelago, on the E by the mainland coast, and to the S by Wilson Point. The N part of the sound is unsurveyed, but the islands, numerous rocks, and dangers are known to exist. The N entrance of the sound between the Heywood Islands and Augustus Island appears to be foul.

Wilson Point (15° 33'S., 124° 24'E.), the rocky S entrance point of Camden Sound, rises steeply to a hill 66m high about 0.25 mile within. Battery Point, 3 miles NE of Wilson Point, is flat, rocky, and about 7m high.

Slate Islets, four in number, are between 5 and 43m high, and lie close off Wilson Point. Two of these islets, which lie closest inshore, are connected to Wilson Point and to each other by coral reef. The outer two islets, which are separated from the inner by a channel 0.15 mile wide, are connected to each other by drying reef which extends up to 0.2 mile S of the extremity of the S islet.

Bumpus Islet, 1 mile N of Slate Islets, is barren, rocky, and 24m high. It is surrounded by drying reef, extending up to 0.15 mile from the S side. Between this reef and that extending from Slate Islets, there is a channel 0.5 mile wide with a least depth of 18.3m.

Rice Rocks are two isolated pinnacles about 0.2 mile apart in a N-S direction which dry up to 1.8m; the S rock lies a little over 1 mile N of Bumpus Rock.

3.42 Sampson Inlet (15° 31'S., 124° 28'E.), entered on the NE side of the bay between Battery and Wilson Points, is deep and narrow widening at its E end into a well sheltered bay. Small vessels with local knowledge proceed through the inlet which is only about 100m wide, but steep-to with depths of 14 to 15m, and enter the bay where good anchorage, sheltered all around, can be taken in 9.1 to 14.6m, mud and clay, good holding ground.

Brecknock and Camden Harbors lie in the NE part of Camden Sound, the former being entered between the SW extremity of Augustus Island and the mainland S, and the latter located approximately 4 miles to the SE. Both these harbors are encumbered with islets and rocks which restrict the anchorage to the use of small vessels with local knowledge.

New Islet (15° 28'S., 124° 30'E.), located in the middle of the entrance to Brecknock Harbor, lies 4 miles NE of Battery Point and has two above-water rocks close off its SW extremity. Four islets lie in a semi-circle about 0.5 mile off the N side of the islet and Needle Rock, 6m high, lies off the S side. There is a clear channel with depths of 11 to 29m on either side of New Islet, but the tidal currents are strong and caution is advised.

Granite Islet (15° 29'S., 124° 36'E.) lies about 6 miles ESE of New Islet on the E side of the approach to Camden Harbor. The latter harbor, although deep in places, is encumbered with rocks and shoal ridges rendering it undesirable even for small vessels.

3.43 Hope Point (15° 37'S., 124° 24'E.) is located about 4.5 miles S of Wilson Point. The coast between these points is rocky and broken by reddish cliffs from 30 to 60m high. Bluff Hill, 88m high, rises 1.5 miles NNE of Hope Point and is wooded with reddish cliffy slopes descending to the sea.

Deception Bay (15° 38'S., 124° 25'E.), entered between Hope Point and Buckland Point, approximately 1 mile S, is free from dangers except at its N and S ends which are shoal with fringing reef at the shoreline. The latter point is low and rocky, with reddish cliffs close S of it. A ridge of hills extending S from the point reaches a height of 44m about 0.3 mile within, and in conjunction with Hope Point and the hills to the E, provides good shelter within the bay during all but W winds. The portion of the bay with depths of over 5.5m is only 1 mile in extent and it affords anchorage only to small vessels able to maneuver within its confines.

Hall Point (15° 40'S., 124° 22'E.), the W extremity of an islet 2.5 miles SW of Buckland Point, is fairly steep and fringed by reef. The islet rises to an isolated rocky summit, 81m high, which is covered with trees and appears wedge-shaped when seen from N or S, being steepest on its E side. The islet is connected to the mainland by a sandy spit which covers at high water, and a large rock, 20m high, lies close off its N extremity.

Between Hall Point and Buckland Point, a small bay is divided by Kid Islet, rocky, 10m high and connected to the shore by a sand spit; this bay affords shelter to small vessels except in N and W winds.

Tidal currents off the coast between Wilson Point and Hall Point set NW on the ebb and SE on the flood, with a maximum rate of about 2 knots at springs.

Prior Point (15° 43'S., 124° 23'E.), about 3 miles SSE of Hall Point, is the N extremity of a narrow, rocky tongue of land which rises at its S end to a height of 79m. A coral reef, with a depth of 3.7m, lies 0.5 mile NW of the point; the reef is identifiable by eddies over it when the current is running.

Claret Islets, a group of rocky islets with a maximum height of 24m, lie in the entrance to the bay formed between Hall and Prior Point. The depths in this bay are irregular at its N and S extremities, but shelve slowly towards a white sandy beach at the center of the bay. Good anchorage in 8m, sand bottom, away from tidal effects, can be found 0.6 mile off the beach. The anchorage is sheltered from winds between N and SE.

The coast between Prior Point and a point about 10 miles S, is generally low, straight, and rocky affording no shelter. The waters off this shore have not been closely examined, but a coral reef lies off the S point extending to Lizard Islet, about 3.5 miles farther S.

3.44 Doubtful Bay (16° 03'S., 124° 02'E.), entered by Foam Pass between **Raft Point** (16° 04'S., 124° 27'E.) and a rocky, high island, about 2 miles NNE, is nearly 10 miles long in a NE-SW direction, but has not been closely examined. The island forming the N entrance point is the S extremity of a chain of high, rocky islands nearly 10 miles long; the coast E of the islands has not been surveyed.

Depths in Foam Pass apparently are not less than 18.3m throughout the fairway; however, there are two islets located on the S side of the fairway; the E one, known as Steep Islet, attains an elevation of 149m and lies 1.5 miles ENE of Raft Point. Within Doubtful Bay, general depths of 18.3 to 30m have been reported, but a reef, with a depth of 1.5m, lies more or less in the middle of the area and the waters in the SE part are unsurveyed.

Anchorage.—Doubtful Bay, being protected by the reefs surrounding Montgomery Island, about 15 miles WNW, affords good shelter with excellent holding ground. However, because the bay and its approaches are only partially surveyed, only vessels with local knowledge should attempt to enter. A range of rocky hills, attaining heights of up to 275m, backs the S and E shores of the bay, and Red Hill, about 8.5 miles E of Raft Point, is conical, forming a good mark for entering. The best anchorage is reported to lie about 2.5 miles E to ESE of Steep Islet in a depth of 11m.

Tidal currents in Foam Pass have been estimated to reach 4 knots; eddies have been observed in the narrower parts of the passage.

Success Strait (15° 57'S., 124° 33'E.), the W of two passages leading to George Water, below, is formed by a large unnamed island at the N end of Doubtful Bay. The passage, which is 6 miles long and about 0.2 mile wide, has depths of 18.3 to 31m and is clear except at its N end where there are two small reefs, which dry. The N approach to the strait is shoal with drying patches and the channel lies close N of the unnamed island.

Tidal currents in Success Strait are strong.

George Water (15° 52'S., 124° 35'E.), a landlocked bay located N of Doubtful Bay, has depths of about 27m over a considerable portion of its length, but its entrance is somewhat obstructed N of Success Strait. It affords good anchorage to vessels with local knowledge, but surveys are incomplete and caution is required. The N part of the bay is obstructed by a large mud bar and the NE section constricts to a small bay encumbered with islets and shoals.

3.45 Montgomery Islands (15° 57'S., 124° 12'E.) consist of one low sandy island, which is densely wooded, lying about 15 miles WNW of Raft Point, and several barren rocky islets lying E of the main island. They all lie on the extensive coral reef which mostly dries, but is generally unsurveyed off its E and S sides.

High Clifty Islet, 22m high, lies on the E extremity of this reef about 7 miles E of the largest island and 5 miles WNW of Lizard Islet; islets extend along the SE side of the reef for a distance of 4 miles SW of High Clifty Islet.

The Breakwater, a long coral spit about 1 mile wide, extends 7 miles N from the NW side of the main reef and terminates about 9 miles NW of the largest of the Montgomery Islands. It dries from 1.5 to 5m and forms a natural barrier during E and

W winds, which can be rather closely approached, especially on its W side, by vessels seeking shelter.

Cockell Reefs (15° 45'S., 124° 05'E.), which are mostly dry, lie from close off to 6 miles N of the N extremity of the breakwater. Cockell Bank, consisting of sand, is located in the SW part of these reefs and dries 7.3m. There are numerous detached shoals and dangers off Cockell Reefs, and due to the strong currents and discolored water often seen in this vicinity, the area should be given a wide berth.

Reyne Shoal (15° 42'S., 124° 10'E.), a rocky, steep-to shoal patch with a least depth of 5.5m, lies about 7 miles NE of the center of Cockell Reefs; Thorne Reef, a small coral head which dries 1.8m, lies 2 miles SSW of this shoal.

Barron Banks (15° 46'S., 124° 18'E.) consists of two isolated coral banks, with depths of 11.9m and 14.6m, lying from 7.5 to 10.75 miles ESE of Thorne Reef.

3.46 Niblock Rocks (15° 49'S., 123° 59'E.), isolated and dangerous, lie with a depth of less than 1.8m, about 4 miles NW of the N extremity of the breakwater. The NW side of these rocks is steep-to with depths of about 26m close by. Nicolle Reef, coral, dries 2.8m and lies about 2.5 miles NNE of Niblock Rocks. It is recommended that vessels without local knowledge not attempt to pass between these dangers and Cockell Reefs.

Denman Shoal (15° 43'S., 123° 56'E.), sand, with a least depth of 18.3m, lies 9 miles WNW of Cockell Bank. Lorikeet Shoal, with a least depth of 10.4m, lies 5.5 miles NE of Denman Shoal.

Viney Island (16° 01'S., 124° 01'E.), about 11 miles WSW of the largest Montgomery Island, is 43m high, rocky, and covered with grass. The N coast is cliffy with reef and rocks off it, and a spit on which there are several rocks, including one 9m high, extends about 0.75 mile WNW from the W extremity of the island. A detached shoal, with a rock which dries 0.9m on it, lies close outside the seaward extremity of this spit.

The Pyramid, a small, barren, rocky islet 58m high and conical in shape, lies 2.5 miles SSE of Viney Island. An islet, 34m high, lies about 0.25 mile SSW of The Pyramid.

Caesar Islet, 28m high, rocky, and covered with grass, lies 5 miles SW of Viney Island.

Scadden Island, 6 miles SW of Caesar Islet, is 64m high, rocky and covered with grass. A rock, which dries 1.2m, lies 0.2 mile NW of the NW extremity of the island.

Caution.—The waters between Caesar Islet and Scadden Island are unsurveyed, but two islets are known to exist to the SE.

3.47 Collier Bay (16° 12'S., 124° 15'E.), entered between **Raft Point** (16° 04'S., 124° 27'E.) and an unnamed point 32 miles WSW, extends about 19 miles SSE, but is almost completely unsurveyed. The shores are fronted by islets and rocks, many of which lie on the outer edge of what appears to be a rather extensive and shoal shorebank extending along the E side of the bay. Past reports have indicated that the coastline charted within the bay is far from accurate and vessels attempting to enter should do so with great caution.

Collier Bay may be entered E or W of the large reef on which the Montgomery Islands are located. The E entrance, between High Cliffy and Lizard Islets is probably preferred,

but several dangers are located within the bay S and SW of the former islet. The W entrances between Viney island and The Pyramid, and between Caesar Islet and Scadden Islet are unsurveyed and little is known about them.

Eagle Point (16° 11'S., 124° 25'E.), about 6.5 miles SSW of Raft Point, is a rocky spur extending N from a high range of hills. A rocky patch, with a depth of less than 1.8m, lies about 0.5 mile W of the point.

The bay formed between Raft and Eagle Points is fringed by a broad coastal bank, which dries. A vessel might take temporary anchorage off this bank and just within the points, where depths of 9.1 to 12.8m are charted.

High Bluff (16° 17'S., 124° 23'E.), about 6.5 miles S of Eagle Point, is formed of gray slate. The entire shoreline between the bluff and Eagle Point is backed by a coastal range of moderate height which is remarkably rugged and has conical peaks scattered along its length.

3.48 Walcott Inlet (16° 22'S., 124° 22'E.), entered through Yule Entrance, about 3 miles S of High Bluff, is a landlocked bay about 5 miles wide and 32 miles in length. It provides excellent shelter for vessels able to enter, but the entrance channel appears to be blocked by a drying sandbank. Vessels have proceeded in at high water and reported depths of 27m within this bank, but the channel is narrow and unsurveyed.

The tidal currents reach 8 knots at springs, causing whirlpools and violent eddies. The shores of the inlet are bordered by hills 150 to 250m in height, but little is known about the depths within.

Fletcher Island (16° 21'S., 124° 21'E.) is charted on the edge of the drying shorebank about 2 miles SW of Yule Entrance. An islet lies close S of Fletcher Island, and two islets and several rocks lie about 3 miles to the NE just N of Yule Entrance.

Secure Bay (16° 27'S., 124° 23'E.), entered about 3.5 miles S of Fletcher Island, through a narrow islet-strewn channel known as The Funnel, is from 0.75 mile to 3 miles wide and about 12 miles long. The bay, which is divided in its center by a narrow cliffy channel with an islet in its middle, provides good shelter for vessels able to enter, but is unsurveyed and has strong tidal currents in the entrance. The hills surrounding the bay are steep and rugged; the depths in the center of the bay are reported to be deep, but little else is known of the general hydrography.

Shoal Bay (16° 25'S., 124° 16'E.), entered through a chain of red sandstone islets extending across its entrance, about 2 miles W of Secure Bay, is about 4 miles long and 2 miles wide. The shores of the bay are steep at the entrance, but become flat farther in before gradually rising again at its head. There are depths of 18.3 to 22m for about 1 mile within the entrance shoaling rapidly thereafter to 7.3m or less. The bay has not been surveyed.

Anchorage, in a depth of 7.3m, can be obtained in Shoal Bay by vessels with local knowledge.

Tidal currents in Shoal Bay decrease rapidly towards its head where they rarely exceed 0.5 knot.

The W shore of Collier Bay is backed by a range of barren rocky hills from 150 to 275m high, rising abruptly from the sea. Several unnamed islands and islets, between which

dangers probably exist, lie off the coast, but they have not been closely examined. Two larger islands lie about 10 miles off the NW part of the W coast. The N island, with several islets off its N extremity, is located about 3 miles SE of The Pyramid.

Talbot Bay (16° 18'S., 123° 52'E.), entered between the W entrance point (16° 13'S., 123° 56'E.) of Collier Bay and a point 6 miles W, is unsurveyed and heavily encumbered with islets, reefs and shoals. Dugong Bay, an extension of Talbot Bay, lies about 10 miles S of the entrance to the latter, but the approach is filled with rocks.

Approaches to King Sound and Yampi Sound

3.49 Browse Islet (14° 06'S., 123° 33'E.) lies N of the offshore tracks about 82 miles NNW of Champagne Island Light. It is 6m high near its N end, and of coral formation covered with white sand; slight vegetation has been observed upon it which apparently varies with the seasons. The islet is surrounded by a coral reef which dries on the NW and N sides to a height of 1.2m; the E side appears to afford the best landing for boats, but only at high water. Anchorage is difficult as the reef is steep-to and the bottom close to its vicinity is uneven.

A historic wreck lies 1 mile ESE of the islet. In 1984, a depth of 15.2m lies 1 mile E of the islet. In 1986, this shoal was not found, but a depth of 25.6m was reported to lie 0.8 mile SE of the islet.

Browse Islet Light is shown from a white, metal framework tower with a white hut adjacent to it. A racon is located at the light structure.

Directions.—Vessels proceeding NE or SW off the NW coast of Australia frequently make Browse Islet Light to establish an accurate position. Vessels proceeding to King Sound or Yampi Sound from NE are recommended to make the same light, especially if navigating by dead reckoning, and thence steer SSW for the vicinity of Adele Island.

Large vessels approaching Browse Islet from NE should exercise caution to avoid Echuca Shoal, about 24 miles ENE of the islet and Heywood Shoal, about 26 miles NNE of the latter. Both these shoals could be dangerous to such vessels, especially in heavy weather.

3.50 Adele Island (15° 31'S., 123° 09'E.) lies approximately 45 miles offshore, NW of the mainland peninsula which separates Collier Bay from King Sound. The island is from 2 to 3m high, sandy, and covered with bushes and grass. It is surrounded by an extensive drying reef, steep-to and of coral formation, with patches of sand scattered over much of its length. A sand cay on the N part of the reef has a height of 0.3m, and much of the rest of the reef dries from 1.2 to 2.7m.

Adele Island Light is shown from a red, metal framework tower close S of the N extremity of the island. A racon is located at the light structure.

Fraser Inlet, a narrow inlet in the NE side of the reef surrounding Adele Island, can be entered by small vessels seeking shelter. Although the entrance and the inlet are deep, the channel is narrow and fringed with dangers, and it should only be attempted at low water and with local knowledge.

Barcoo Shoal (15° 39'S., 122° 55'E.), about 1.25 miles long in a NW-SE direction, lies about 16 miles SW of Adele Island

light and has a least depth of 3.9m, coral. Depths of less than 37m generally surround the shallowest part of this danger to a distance of 0.5 to 1 mile.

Adele Island Shoal (15° 42'S., 123° 14'E.), with a least depth of 8m, lies about 13 miles SSE of Adele Island Light with depths of less than 18m extending up to 2 miles S, and 4 miles N of it. There are heavy tide rips S of Adele Island Shoal during the peak of the tidal currents.

Frost Shoal (15° 47'S., 123° 21'E.), with a least depth of 5.5m, lies about 8 miles SE of Adele Island Shoal, on a bank with depths of less than 37m. There are usually heavy tide rips over this shoal during the strength of the tidal currents.

Tasmanian Shoal (15° 53'S., 123° 21'E.), with a least depth of 14m, lies about 7 miles S of Frost Shoal.

Tidal currents in the vicinity of Adele Island are strong with rates of 2 to 4 knots during springs. Along the W side of the reef surrounding the island, the flood sets S to SSE and the ebb N to NNW. To the N and S of the reef the flood and ebb currents, respectively, maintain an E-W character with rates more commonly at or near the stronger levels in this vicinity.

3.51 Churchill Reef (15° 28'S., 123° 15'E.), an extensive coral reef which dries 2.7m on its W part, is separated from the E side of the reef surrounding Adele Island by a channel about 1.25 miles wide with depths of 73 to 110m along its W side. The 37m curve off the W side of Churchill Reef is usually clearly defined by the discoloration of the water between it and the reef E of it.

The waters N and E of Churchill Reef are unsurveyed and the eastern limits of this reef are unknown. The bottom in this area appears uneven and numerous uncharted dangers may exist.

Albert Reef (15° 37'S., 123° 20'E.), consisting of coral, dries 2.1m and lies about 13 miles SE of Adele Island. Another reef, which dries 1.2m, lies close off the NW extremity of Albert Reef, and a shoal, with a depth of 3.3m, is located about 2 miles NNW of the latter.

Beagle Reef (15° 20'S., 123° 31'E.), about 23 miles ENE of Adele Island, is composed of dead coral and patches of white sand. A sandbank in its center, about 0.75 mile in extent, dries 7m and forms a good mark at low water.

Dingo Reef (15° 19'S., 123° 37'E.), which dries 0.6m, lies 4.5 miles E of Beagle Reef, and Fox Shoal, with a depth of 6.7m, lies 5.5 miles SE of Dingo Reef. The bottom between these dangers is uneven and other shoals may exist.

Mavis Reef (15° 31'S., 123° 36'E.), on which there is a sand cay which dries 6.1m, lies 11 miles SSE of Beagle Reef. Three small drying reefs lie within 2 miles of the NW extremity of Mavis Reef. A drying rock lies about 2 miles W of the southernmost drying reef.

Rosella Shoal (15° 35'S., 123° 50'E.), with a depth of 8.5m, lies about 13 miles ESE of the SE extremity of Mavis Reef. A depth of 11m was reported (1967) to lie about 6.25 miles NNE of Rosella Shoal and a depth of 12.8m was reported (1964) to lie about 5 miles NE of the same shoal.

Buccaneer Archipelago—West Part

3.52 The Buccaneer Archipelago lies in the N approach to Yampi Sound and the NE approach to King Sound. It consists

of numerous islands, islets, and rocks all generally located off the NW extremity of the peninsula separating Collier Bay from King Sound. There are channels between many of the islands, some of which are available to deep-draft vessels; however, the tidal currents are strong, reaching 6 to 10 knots in some of the restricted areas, where violent tide rips and eddies are formed.

Caffarelli Island (16° 02'S., 123° 17'E.), the westernmost of the islands in the Buccaneer Archipelago, is rocky and covered with coarse grass and scrub. The summit of the island, which rises to 63m, is located at the W end; the rest of the island is formed of hills about 49m high. The coast of Caffarelli Island is indented with several bays, but they all dry and are fringed with dense mangroves. The S coast is steep-to, but the N coast is fringed by drying reef with islets and rocks on it. An islet, 37m high, lies on the edge of the reef which extends from the W extremity of the island; a rock, awash, lies close S of this islet.

Caffarelli Island Light is shown from a white metal column situated on the summit at the W end of the island.

Caution.—Tidal currents W of Caffarelli Island are strong, setting SSW to SE on the flood and NNW to NNE on the ebb. Vessels should navigate with care as the currents shift direction N and S, respectively, of the island.

3.53 Thornbury Reef (16° 02'S., 123° 15'E.), which dries 1.2m, lies 1.5 miles W of Caffarelli Island and is small and steep-to. Its position can usually be ascertained using the tidal eddies around it. There is a deep, clear channel between Thornbury Reef and the islet off the W extremity of Caffarelli Island.

Brue Reef (15° 56'S., 123° 02'E.), which dries 6.7m, lies about 15 miles WNW of Caffarelli Island Light and has numerous boulders on it, mostly at the N end. The reef is isolated and generally steep-to all around.

Anchorage can be taken in good weather on the bank about 1 mile E of Brue Reef in a depth of 24m, sand and coral. The area should be cleared if the weather becomes unsettled, as a heavy swell can quickly rise in the vicinity.

Shepards Patch (16° 01'S., 122° 55'E.), with a least depth of 16.5m, lies with its shallowest part about 8 miles SW of Brue Reef. Etheridge Patch, with a depth of 18.3m, lies about 6.5 miles SW of Shepards Patch, and is the shallowest part of a bank, with depths of less than 37m, which extend S from positions 3.5 miles NNW and 2 miles SE, respectively, from this patch. The tidal currents set at a considerable rate over these two patches and vessels should pass SW of them.

Breeding Patch (16° 05'S., 123° 02'E.), with a least depth of 14.6m, lies about 3.75 miles ENE of Etheridge Patch, and nearly in the center of the narrow bank with depths of less than 37m.

Fraser Rock (16° 07'S., 123° 04'E.), with a least depth of 1.7m, is a dangerous pinnacle rock which lies 2.5 miles SE of Breeding Patch. Banks, with least depths of 12.8m and 14.6m, lie SSE and NNW, respectively, of Fraser Rock. Fitz Gerald Patch, with a least depth of 11.8m, lies 4 miles SE of Fraser Rock. The depths between Breeding Patch and Fitz Gerald Patch are irregular; long lines of tide rips are seen during springs.

Pincombe Reef (16° 05'S., 123° 10'E.), a pinnacle which dries 1.8m and is steep-to all around, lies 6.5 miles WSW of

Caffarelli Island and is usually marked by eddies. The tidal swirls around this rock make it appear to be much larger than its actual size.

Cleft Islet (16° 02'S., 123° 21'E.), about 2 miles E of the E extremity of Caffarelli Island, is the highest of a group of five islets located close together on a coral reef extending 2 miles E from its position. The islet, split in two by a chasm, rises to a bare summit at its E end, 56m high, and forms an excellent mark from seaward.

A rocky islet, 8m high, lies 0.5 mile W of Cleft Islet and there is deep water at a distance of 0.1 mile all around it. Drying reefs lie between this islet and the E extremity of Caffarelli Island.

Caution.—In 1983, tide rips were reported close W of Cleft Islet. A depth of 5.8m lies 0.25 mile N of the NW point of Cleft Islet.

Barrett Rock (16° 04'S., 123° 20'E.), 0.3m high, lies 1.75 miles SSE of the E extremity of Caffarelli Island and is surrounded by drying reef to a distance of 0.25 mile; a detached drying reef lies about 0.4 mile W of this rock.

Fraser Island, Admiral Island, and King-Hall Island are the largest of the islands extending about 5 miles ESE from Barrett Rock, and along with numerous islets and rocks, are all located on a connecting, drying reef. They are mostly flat-topped and covered with bushes, the highest elevation obtained, 84m, being near the middle of Admiral Island. Detached reefs fringe this group, mostly on the N side. Bowles Rock, 1m high, is the farthest offshore, at a distance of 1.5 miles N of the E extremity of Admiral Island.

3.54 Powerful Island (16° 06'S., 123° 26'E.) is separated from the E extremities of Admiral and King-Hall Islands by a deep narrow channel through which the tidal currents flow with considerable force. The E side of the island is heavily indented and fringed by reef, but the W side is steep and cliffy, reaching a maximum elevation of 91m at Ram Point, the SW extremity.

Dampier's Monument, 86m high, lies 0.5 mile S of Powerful Island and is conical in shape with a rounded summit. Although small, the islet is very conspicuous from NE and forms a good mark from Yampi Sound.

Sir Frederick Island, 79m high, lies 1 mile W of Dampier's Monument and has numerous bays along its rocky coasts which mostly dry. Reefs and shoal water fringe the island and the entrances of the bays. Two reefs lie within a distance of 1.25 miles of the W extremity of the island; on the outer reef there is a rock 12m high, and on the inner reef a rock 17m high. There are also two islets close off the E extremities of Sir Frederick Island.

Lord Island and Bryon Island, 66m and 87m high, respectively, are located on the same reef S of Dampier's Monument. The S coast of Bryon Island is steep-to, the W sides of both being cliffs fronted by coral reefs. This reef extends a distance of 1 mile NE of Lord Island, with rocks below mentioned.

Finch Islets are a group of rocks, from 15 to 47m high, on the reef lying NE of the N extremity of Lord Island.

Reefs, which dry, extend 1.25 miles NW of the W extremity of Byron Island; the outer dries 0.9m, the one between 7m, with a rock 2m high between it and the island.

Gagg Islets are a group of small islets and rocks, ranging from 21 to 52m high, mostly connected by reef, lying nearly parallel to the S side of Byron Island, for 3.5 miles, rendering the channel between Byron and Hidden Islands dangerous.

3.55 Gibbings Island (16° 09'S., 123° 31'E.), circular in shape, with an extreme width of 1.25 miles, lies midway between Byron Island and Margaret Island. It is steep-to at its N and S extremities, but a coral reef extends 0.35 mile off its W side and 0.7 mile off its E side. Its summit, which is a bare rock, is 86m high.

A patch, which dries 0.3m, lies 0.5 mile SE of the SE extremity of Gibbings Island. Between the patch and the E shore is a rock 14m high, about 0.75 mile off the mainland, and a patch of 0.4m, about 0.15 mile from the mainland.

Dorothy Island, 44m high, is a narrow island E of Gibbings Island, and encircled by the same reef. It has a rocky islet, 32m high, close off its NW end.

Hidden Island (16° 15'S., 123° 30'E.), the largest of the archipelago, appears as a portion of the mainland, but is separated by a narrow channel. It is of irregular shape, and about 5 miles long, N and S, with an extreme width of 3.25 miles. Its summit, near the S end, is 135m high; on the N part is a hill, 97m high. The island is covered with low scrub and stunted gum trees.

There is a large bay on the SE side of the island, with a mangrove swamp at its head, fronted by mud flats, which form the N side of Whirlpool Pass.

Bayliss Islands (16° 09'S., 123° 32'E.), a narrow string of islands connected at low water, lie 0.45 mile off the NE part of Hidden Island; the N and largest is 56m high. A series of detached reefs extend for a distance of 1.5 miles NW of the Bayliss Islands, on which are four rocks from 1 to 19m high. A reef, with depths of less than 5.5m, lies parallel to, and about 0.25 mile from, the E coast of the N Bayliss Islands.

Between Bayliss Islands and the mainland are a number of islets and reefs, mostly on the eastern side of the N approach to Whirlpool Pass; a reef which dries 0.9m lies in the fairway W of them, about midway between the N extremity of Bayliss Islands and the SE extremity of Gibbings Island.

3.56 Whirlpool Pass (16° 15'S., 123° 30'E.) leads between Hidden Island on the W, and Chambers and Dunvert Islands on the E. It is only 0.2 mile wide at its narrowest part, and the tidal currents run with great rapidity through it, forming whirlpools, which restrict navigation only during slack water by small craft with local knowledge.

Chambers Island (16° 16'S., 123° 32'E.), on the E side of Whirlpool Pass and practically connected with the mainland, is 2.5 miles long and 0.7 mile wide; its summit, 92m high, is at its E end.

Several islets from 37 to 55m high are located N and NE of the E end of the island, between it and the mainland, and form the E point of the entrance to Whirlpool Pass from the N.

Dunvert Island, 90m high, lies to the S of Chambers Island, at right angles to it, being connected by a coral reef which dries at low water. Steep Head, its S extremity, is a cliffy point, 89m high, with a reef extending 0.25 mile in a S direction. A rock, which dries 1m, lies in the middle of the channel 1.25 miles NNW of Steep Head.

Two islets lie 0.3 and 0.6 mile, respectively, from the E side of Dunvert Island; between them and the mainland is a shoal with depths under 5.5m.

Buccaneer Archipelago—East P art

3.57 Macleay Islands (15° 15'S., 123° 41'E.), mostly connected by a reef, are located at the NE extremity of the islets and dangers forming the Buccaneer Archipelago. They extend in a general N-S direction from 9 to 16 miles N of Yampi Sound and form a major navigational hazard in the NE approach to that body of water.

King Islets (15° 52'S., 123° 38'E.), 16m and 19m high, the NW of the group, are located on the W end of a reef 2.5 miles in extent; depths of over 37m will be found 0.4 mile W of it. Rocks up to 11m high lie near the E and S extremities of the reef.

Conway Islet, 9m high, lies N of the E part of King Islets Reef, on a reef 0.6 mile in extent, practically connected with the latter. An islet, 4.3m high, is located close SE of Conway Islet.

Challis Rocks, the NE of the group, consists of a line of bare rocks, 3.3m high, located on a reef 1.25 miles in length, about 1.75 miles E of King Islets Reef. Deep water will be found close E of Challis Rocks.

Scobell Rocks, 1.3m high, lie on a reef 0.9 mile in extent, and which dries 6.5m midway between the SE extremity of King Islets Reef and the largest Macleay Island.

3.58 Macleay Island (15° 57'S., 123° 42'E.), the largest island of the chain, is a flat-topped grassy island, 69m high, and 2.25 miles in length in a N-S direction; its W side is formed of steep cliffs, from 49 to 61m high. Near the N end of the island is a salt-water lagoon nearly cutting the island in two. Two small islets, 28m and 15m high, lie close off its S end.

Landing may be effected on either of the two shingle beaches at its S end. No water has been found on the island.

Crabbe Islet, 24m high, lies 0.5 mile S of Macleay Island, on the same reef; it is steep-to on its S side.

Sweeney Patches (16° 00'S., 123° 44'E.), with a least depth of 14.6m, are located on a bank 2 miles in length, from 1.5 to 3.5 miles SE of Crabbe Islet. There are heavy tide rips over these patches during strong winds.

Gibbings Reefs (15° 56'S., 123° 45'E.), drying 0.9m at low-water springs, are two dangerous patches, 1.5 miles apart in an E and W direction. The E reef lies about 5 miles E of the summit of Macleay Island; these reefs should be given a wide berth, as they are usually hard to distinguish.

There is deep water to the E and W of the Macleay Islands, but the channel to the W is preferred as Gibbings Reefs form a natural danger on the E side. The channel between the S extremity of the Macleay Islands and the W extremity of Koolan Island, about 7 miles S, is deep, wide and clear, and easily navigated.

3.59 Bathurst Island (16° 02'S., 123° 31'E.), 94m high with steep cliffs along the SW coast, lies, along with Irvine Island, on an extensive coral reef, the greater part of which is covered

with sand. A rock, 5.2m high, is located near the edge of the reef, extending for a distance of 0.45 mile from its N extremity.

Rocks, 24m and 46m high, are located on the reef which extends over 1 mile from the E side of the island, with a rock, 15m high, between the reef and Kathleen Island, and others as charted. A detached reef lies awash about 0.75 mile E of the SE extremity of Bathurst Island.

Irvine Island (16° 05'S., 123° 32'E.), 156m high, lies S of Bathurst Island and is 2.25 miles in length, N and S, and 2.25 miles in breadth. Two bays, both of which dry at low water, lie on either side of its SE point. The island is covered with stunted gum trees and coarse grass.

Kathleen Island, 81m, lies off the NE extremity of Irvine Island. Flora Islet, covered with coarse grass and about 24m high, lies off the NW extremity of Irvine Island.

Tanner Islet, marked by a light shown from a concrete tower on the summit of the islet, lies near the SW side of Irvine Island. A patch of reef, which dries 5m, lies about 0.25 mile off the W side of Irvine Island.

McIntyre Islet (15° 59'S., 123° 32'E.), 57m high, the N island of the above group, is located about 2 miles NNE from the N extremity of Bathurst Island; a reef extends 0.25 mile off its S and SE sides, and to a lesser distance elsewhere. A rock, awash, lies close off its E end. There is a clear channel between McIntyre Islet and Bathurst Island.

Lena Reef, which dries 0.3m at low-water springs, lies about 0.7 mile NW from McIntyre Islet. It breaks heavily with a NW swell.

Yampi Sound

3.60 Yampi Sound (16° 08'S., 123° 38'E.) lies between Cockatoo Island and Koolan Island on the N and the mainland on the S. Its shores are rocky, with numerous coves. The coast ridge, which is from 150 to 180m high, is sterile, a few stunted gum trees and low scrub being the only vegetation visible, and the interior has scarcely a more fertile appearance.

A first port of entry encompasses Yampi Sound. The limits of the port extend from a position in 16° 13'S, 123° 32'E in a N direction 10 miles to a position between Bathurst Island and Irvine Island, then E for 15 miles; then S to the mainland. The S limit includes the coastline between the W and E limits.

Yampi Sound can be entered from the NW between Irvine and Gibbings Islands, from the N via Galah Channel between Irvine and Cockatoo Islands, or from NE via Parakeet Channel between Cockatoo and Koolan Islands.

Caution.—Numerous uncharted pearl farms, consisting of fixed or floating structures, along with their associated moorings, are located in the bays and inlets between Yampi Sound and Cone Bay. These farms are generally marked by buoys or beacons, which may be lit, and should be avoided.

Tides in this area can rise as much as 10m at springs and caution should be exercised to not anchor over shoal areas during HW.

3.61 Cockatoo Island (16° 06'S., 123° 37'E.), centered about 3 miles ESE of Irvine Island, is 3.25 miles long in a WNW-ESE direction and about 0.5 mile wide. Its summit near the center is 137m high; there is a conspicuous cone-shaped

hill 55m high at its W extremity. A deep valley extends up the center of the island in an ESE direction.

Usborne Islet, 55m high and cliffy, lies close E of Cockatoo Island and is connected to it by reef. The ore berth on Cockatoo Island is described in [paragraph 3.65](#).

Caution.—Unexploded ordnance lies in an area, with a radius of 0.5 mile, centered about 0.75 mile S of the NW end of the island, in a depth of 10m. Unexploded ordnance also lies in an area, with a radius of 0.5 mile, centered about 1.25 miles WSW of the S end of the island, in a depth of 30m.

Black Rock (16° 05'S., 123° 35'E.), 4.6m high, lies 0.4 mile off the W end of Cockatoo Island, with which it is connected by a reef, dry at low-water springs. A small reef, which dries 0.6m, lies 0.25 mile S of Black Rock. A shoal, with a least depth of 7.3m, lies between 0.2 and 1.1 miles SW of the W end of Cockatoo Island.

The Piccaninnies are a group of rocks and shoals which lie near the middle of Yampi Sound, about 1.5 miles SW of the E extremity of Cockatoo Island. The E of these rocks, 24m high, is surrounded by drying reef. The W rock, 13m high, and another rock, 20m high, are located together on a reef about 0.75 mile W of the E rock. A detached reef, which dries 2.4m, lies about 0.2 mile S of the two westernmost rocks.

There is a clear deep channel about 0.5 mile wide between The Piccaninnies and the S side of Cockatoo Island.

3.62 Koolan Island (16° 08'S., 123° 45'E.), about 1.5 miles E of Usborne Islet, is separated from the mainland by a narrow deep channel known as The Canal. The island is 204m high near its center, 7 miles long in an E and W direction, and has a maximum breadth of 3 miles at its E end, tapering to the W. Sanders Point, the NE extremity, is 122m high, with cliffs along its W extremity.

Roberts Islet, 60m high, lies 0.25 mile off the W extremity of Sanders Point, with another islet, 33m high, W of it, between which is a rock which dries 0.3m; both are covered with scrub and are steep-to on their N sides.

There are large deposits of ironstone on Koolan, Cockatoo, and Irvine Islands.

Tarrant Islet, which is 71m high, lies off the W end of Koolan Island and is connected to it by a drying reef. The island is 0.5 mile long in an E-W direction and 0.1 mile wide. On its northern side it is bare and rocky with steep cliffs.

The Canal (16° 08'S., 123° 44'E.) is a passage 0.6 mile wide at its W end, narrowing considerably toward its E end, where it forms a dangerous channel, known as The Gutter, through which the tidal currents run with great velocity. There are depths of 20 to 30m over most of the length of this passage and it is used by large vessels proceeding to the wharf at Koolan Island.

3.63 Nares Point (16° 08'S., 123° 42'E.), the S point of the entrance to the canal, is 71m in height, rising within. A light is shown from Nares Point.

A reef, which dries 1.2m, lies about 1 mile SW from Nares Point; between this reef and the point abreast, 38m high, are other reefs.

The bights on either side of the latter point afford good anchorage for small craft. From the head of the western bight, Silver Gull Creek extends about 1 mile SSE and then almost 1 mile NE; fresh water may be obtained from a spring in the creek. At spring tides vessels with local knowledge and drawing not more than 2.7m can enter the creek from about half flood to half ebb.

Margaret Island (16° 09'S., 123° 35'E.), with a bare conical summit, 97m high, lies about 7 miles W of Nares Point and close to the mainland. Woodhouse Point, its NE extremity, is the W point of approach to Yampi Sound. A reef, which dries 5.5m, extends 0.35 mile N from the point.

Channels to Yampi Sound

3.64 Galah Channel (16° 05'S., 123° 34'E.), which leads between Irvin Island and Black Rock off Cockatoo Island, is a clear passage with depths of over 37m over a width of about 0.3 mile on the W side of the channel. Galah Channel is frequently used during daylight by vessels proceeding to or from Cockatoo Island and the NE, but local knowledge is recommended.

Parakeet Channel (16° 07'S., 123° 40'E.) leads E of Cockatoo Island between Osborne Islet and Tarrant Islet and is wide and deep, except for Comber Rock, a small, steep-to reef which dries 0.6m and lies in mid-channel. Parakeet Channel is frequently used by vessels proceeding to or from Koolan Island or Cockatoo Island from the NE and is considered somewhat easier to navigate than Galah Channel. A shoal, with a least depth of 20.1m, lies 2 miles NE of Comber Rock.

The main channel from NW leads between Irvine and Gibbings Islands and is wide and deep. It is frequently used by vessels unfamiliar with the sound when picking up pilots for Derby or Cockatoo Island.

Yampi Sound (16° 07'S., 123° 40'E.)

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3.65 Yampi Sound consists only of the ore berth located on the S side of Cockatoo Island. Vessels proceeding to Derby and requiring a pilot frequently proceed to Cockatoo Island where pilots will board for the run into King Sound.

Winds—Weather.—From November to March, Yampi Sound is near the S extremities of the Northwest Monsoon; cyclones can be expected during this period. The effects of cyclones are more prevalent in this area early in this period, however, cyclones have been experienced here as late as April.

During the wet season, from November to March, the prevailing winds are from the W, and are strong at times, particularly during the afternoon. Rain and thunder squalls are also frequent during this period; the accompanying winds can reach gale force.

During the dry season, from April to October, very little rain falls. During the mornings, there are frequent periods of SE winds; these give way to light W sea breezes in the afternoon. No cyclones are likely during this period.

Temperatures during summer frequently reach 40° C and the atmosphere becomes somewhat oppressive. During winter the air is cool and dry with temperatures falling to 14° C at night.

Tides—Cur rents.—The maximum tidal range is 9.9m. At Koolan Island wharf, the tidal current sets E except for a period 0.5 hour before to 2.5 hours after high water, when the current sets W; it has been reported that the tidal current attains a rate of 3 knots on both the ebb and the flood.

Depths—Limitations.—Depth in the channel approach to the berth is 20.1m. The ore berth on Cockatoo Island is closed.

Cockatoo Island was re-opened in 1994. A light, located on the top of the old power station, 0.5 mile NW of the jetty, is exhibited 24 hours before the arrival and after departure of vessels scheduled for loading at the jetty.

Pilotage.—Pilots are available though not compulsory by day and at night. The pilot boarding place is 2 miles W of Nares Point Light. The pilot launch is equipped with a radio-telephone. There are two tugs in Yampi Sound Port.

The Port Office on Cockatoo Island is equipped with VHF channels 6, 12, 14, 16, and 67. The call sign is KOOLAN ISLAND. An ETA of 48, 24, and 2 hours prior to arrival is required.

Anchorage.—The quarantine anchorage is located about 0.75 mile WSW of Collins Cove Light Beacon in depths of 18 to 29m, mud.

Anchorage can be taken off the W entrance of The Canal in 14 to 18m, mud, good holding ground, with the E extremity of Tarrant Islet bearing about 341° and Nares Point Light bearing about 100°.

Caution.—Vessels should not proceed E of the berth on Cockatoo Island without a pilot.

Approaches to King Sound

3.66 King Sound (16° 25'S., 123° 20'E.) is entered between the S extremity of **Hidden Island** (16° 17'S., 123° 30'E.), which is part of the Buccaneer Archipelago, and Swan Point, about 27 miles W. It extends about 60 miles SSE to the town of Derby, which stands at the entrance to Fitzroy River, and has depths of more than 18m within 20 miles of its head. Within this distance the depths gradually shoal towards the shore eventually drying at the Derby berth, but the sound itself affords anchorage throughout.

Caution.—Mean spring tides rise 10m at Derby with maximum rises recorded at nearly 11m. Such rises result in very strong tidal currents in the entrance to King Sound (up to 10 knots) and low-powered vessels are recommended to proceed in only at or near slack water. Strong and dangerous overfalls are formed at such times on and around the dangers in Sunday Strait.

Vessels proceeding to Derby (see paragraph 3.86) and requiring a pilot frequently proceed to Cockatoo Island, where pilots will board for the run into King Sound.

3.67 Swan Point (16° 21'S., 123° 02'E.), the NW extremity of King Sound, is low and cliffy. A patch of 3.7m lies 0.4 mile offshore, about 0.75 mile W from Swan Point.

Swan Point is the NE extremity of a peninsula some 40 miles in length, within which is the W shore of King Sound. Shoals extend about 7 miles N of the cape, and islets and shoals extend some 12 miles E of Swan Point, terminating in Sunday Islands. Between these are the surveyed channels leading to Sunday Strait, S of Pitt Shoal and the Twin Islets and into King

Sound. Meda Pass, between the Roe and Sunday Islands, is the recommended route. Escape Pass, 2.5 miles E of Swan Point, leads directly into King Sound, but on account of the strong tidal currents local knowledge is considered necessary for its safe navigation.

Swan Island, 15m high, and 0.5 mile long, is located 0.25 mile NNE of Swan Point, with which it is connected by a ridge of rocks which dries 3.7m.

Karrakatta Rock, with a depth of 3.7m, is located on the NW edge of a rocky ledge extending 0.5 mile WNW from the N extremity of Swan Island.

Between Karrakatta Rock and the E extremity of Alarm Shoal is a deep channel 0.5 mile wide leading from seaward to King Sound, by Meda Pass or by Escape Pass. The tidal currents rush around Swan Island with considerable violence, rendering the passage hazardous for low-powered craft, and difficult without local knowledge.

3.68 Pitt Shoals (16° 15'S., 122° 53'E.) are the outer and westernmost dangers in the W approach to Sunday Strait. The main ridge within the 18.3m curve is about 4.5 miles in length E and W, and from 0.2 to 0.5 mile wide, including detached patches. The least depth on this ridge is 4.6m located about 10 miles NW of Swan Point. At a distance of 2 miles N of the 4.6m head is a shoal about 0.5 mile in extent with a least depth of 3.7m.

Tides—Curr ents.—Over the Pitt Shoals the flood sets E and the ebb W at a rate of 1 to 3.5 knots, and also in the fairway between them and Alarm Shoal.

Alarm Shoal (16° 20'S., 122° 59'E.) is a long narrow shoal of sand extending about 8 miles W from a position 1.5 miles N of Swan Point. It is from 0.5 to 1 mile wide with depths varying from 1.8 to 9.1m, and dries in places about 2.25 miles NW of Swan Point.

Northwest Twin Islet (16° 17'S., 123° 04'E.), 9.1m high and located 4.25 miles NNE of Swan Island, is the north westernmost of the group. It is a rocky islet, 0.15 mile in extent, surrounded by a coral reef extending from 0.1 to 0.25 mile from it. A sunken, rocky flat, with depths under 3.7m, extends 0.6 mile NE from the islet.

To the E of this flat is a shoal 0.5 mile in extent, with a least depth of 7.8m, steep-to. These flats are marked by strong tide rips.

Ferret Reef, 0.5 mile in extent and steep-to, is nearly awash at low water. Its NW extremity is located about 1.5 miles NW from Northwest Twin.

Southeast Twin Island, rocky and 14m high, is 0.25 mile long and 0.15 mile wide; it is located 2 miles SE of Northwest Twin Island, and is surrounded by a fringing reef extending from 0.1 to 0.2 mile from the coast, and steep-to on the W side.

Shoal water extends 0.5 mile NE from the island, 0.25 mile S and SW, and 0.1 mile to the SE.

A bank, with depths of from 12.8 to 16.5m, is located 1.5 miles SE of the Southeast Twin Island, with other patches of 16.5m in the same direction.

There is a channel nearly 2 miles wide between the dangers off the E side of Southeast Twin Island and the northwestern 9.1m head of Anchor Shoal.

Anchor Shoal (16° 21'S., 123° 09'E.), with general depths of from 2.7 to 5.5m, is a sandy shoal extending within the 10m

curve, for a length of 2.75 miles in a NW and SE direction, and having a breadth of about 0.35 mile. The shallowest part is a small patch about 0.2 mile long, with a depth of 0.3m located nearly in the center, at 4 miles SE from Southeast Twin Island. A detached shoal of 7.3m is located 0.75 mile E of this shoal head.

Anchorage.—Vessels proceeding into King Sound against the northgoing current may find it convenient to anchor on the bank N or E of Anchor shoal.

3.69 Sunday Strait—A pproach channel—Sunday Strait (16° 24'S., 123° 16'E.), the main entrance to King Sound, is situated between Salier Islands, Tide Rip Islands, High Island, Tree Island, and Mermaid Island on the E, and Pincombe Shoal, the Roe Islands, and Sunday Islands on the W. It is about 11 miles in length N and S by about 4 miles least breadth between the East Roe Island and Hancock Reef, which extends W of Tree Island. The tidal currents run with considerable velocity and must be guarded against in vessels of low power. The fairway dangers are Menmiur Rock, with dangerous overfalls during the strength of the currents, and Amur Reef and Alert Rock, 6 and 7 miles within it. A shoal, with a depth of 15.9m, lies on the recommended track about 0.5 mile ESE of East Roe Island.

Caution.—Sunday Strait should be navigated during daylight hours only and preferably at the time of slack water.

The tidal currents are very strong; rates of up to 10 knots have occurred at springs. These currents set across the track N of East Roe Island and form dangerous overfalls in the vicinity of Menmuir Rock and Rip Rock.

3.70 Sunday Strait—East side—T ide Rip Islands (16° 19'S., 123° 18'E.), a group of rocky islands, occupies a space 2 miles long in an E and W direction, and 1.5 miles wide. Gibson Island, 33m high, and Gregory Island, 41m high, are the largest of the group, and are both of irregular form, standing on the same reef and nearly connected at their N extremities. A coral patch, drying 0.6m, is situated 0.25 mile S of Gibson Island.

Doris Island, 39m high, is the NW of the Tide Rip Islands, and is nearly 0.5 mile long by 0.25 mile wide; it is separated from Gibson Island by a narrow channel.

Fairthlough Ridge, with a least depth of 5.5m, coral, extends about 2.5 miles NNW from a position 1.5 miles NNW of Doris Island.

Salier Islands (16° 19'S., 123° 16'E.), bare, rocky, and small, form a closely connected chain, steep-to, 2 miles long in a NW and SE direction, from 19 to 30m high, and about 100m wide. The islands are separated from Tide Rip Islands by a channel 1 mile in breadth, which has a depth of about 18.3m.

High Island (16° 21'S., 123° 21'E.), 89m high, 2.25 miles in long, and 1 mile wide, is located about 1 mile SE of Gregory Island; the W side is steep-to, high, and cliffy; the S coast is much indented and has a fringing reef.

A narrow reef extends about 0.75 mile N from its NE coast, and a small detached reef, which dries 5.5m, lies close off the N extremity of the island. A reef, with a rock on it 13m high, extends about 0.25 mile SE from the SE extremity of the island.

Caution.—The ebb current sets at a rate of from 4 to 8 knots toward the S side of High Island.

3.71 Tree Island (16° 23'S., 123° 18'E.), 26m high, about 0.3 mile long, and about a little over 0.1 mile wide, lies 2 miles SW of High Island, and forms the E side of the entrance to Sunday Strait.

Reefs extend about 1.5 miles SE from Tree Island, having upon them several islets and rocks, of which Clarke Islets, a group of three, 5.5m high, are located on the SW edge. Wood Islets, from 1 to 5m high, form a chain near the NE edge.

Reefs surround Tree Island, extending 0.4 mile W into the strait, with rocks on it, the W of which is 6m high.

Hancock Reef dries 5m, and is located 0.3 mile SW of the above rocks, to which it is connected by a shallow rocky ledge; its western edge lies about 0.75 mile W of the summit of Tree Island.

Pillar Rock, 5.5m high and conspicuous, is located 0.1 mile within the S edge of these reefs, and a rock, which dries 3m, lies on the extreme edge, forming the W side of Mermaid Passage.

Mermaid Island (16° 26'S., 123° 21'E.), 66m high, 2 miles long in a N and S direction, and 1 mile broad, is a rugged island, located 2.5 miles SE of Tree Island; reefs, with rocks above-water, extend from the N and S extremities, but the E and W sides are fairly steep-to. A reef, with three islets and some rocks on it, extends as far as 0.5 mile from its SE side, and a detached reef, which dries 1.5m, lies about 0.5 mile N of the island.

Mermaid Passage (16° 25'S., 123° 20'E.), about 1 mile broad, separates Wood Islets Reef, on which is Pillar Rock, from Mermaid Island. A bank, with a depth of 11.9, and possibly less, marked by strong tide rips, is located in the center of Mermaid Passage.

3.72 Wybron Islets (16° 28'S., 123° 21'E.), a group of four rocky islets lying on the same reef, of which the highest is 15m, are located 0.75 mile S of Mermaid Island; the channel between the reefs on either side, 0.3 mile wide, is free from dangers, but the tidal currents vary in direction.

Channel Rock (16° 26'S., 123° 23'E.), 2m high, is a small reef, steep-to in the N entrance to Fantome Passage, and located 090°, 1.25 miles from the SE extremity of Mermaid Island. The channel between is deep and free from dangers.

Fantome Passage, about 1 mile wide, and free from dangers, separates Wybron Islands from Vickery Islet, and affords the best passage for small vessels proceeding from King Sound to Yampi Sound.

Vickery Islet (16° 29'S., 123° 21'E.), 4m high, is a small bare islet surrounded by a reef, and is the NW of two parallel chains of small rocky islands, covered with scrub and long grass, about 0.15 mile apart, extending to Faint Point, the SW entrance point of Crawford Bay.

Strickland Bay and Cone Bay, entered from the N and S of High Island (16° 21'S., 123° 21'E.), respectively, are two elongated bays, both shoal in their inner parts. The approaches and confines of these bays are heavily encumbered with numerous islets and dangers and only small vessels with local knowledge should attempt to enter.

3.73 Sunday Strait—West side—Roe Islands (16° 18'S., 123° 12'E.) are two narrow islands lying about 9 miles E of Swan Point.

West Roe Island is rugged and bare, 33m high, 1.5 miles long, and about 0.25 mile wide; the S side is steep-to, but a fringing reef extends from 0.1 to 0.3 mile from the N coast. The reef that extends W for about 0.5 mile from the W side of the island appears to form part of the island. A rock, with a depth of less than 1.8m, lies about 1 mile NNW of the W extremity of West Roe Island, and several rocks, from 5 to 12m high, are located close off the same point.

East Roe Island (16° 22'S., 123° 47'E.), 0.9 mile E of West Roe Island, is 23m high at the E end and covered with coarse grass; the W end forms a knob.

Mid Rock, 3.7m high, is located midway between East and West Roe Islands and lies on a reef nearly connected with East Roe Island.

Pincombe Shoal, of sand, gravel, and coral, with a depth of 1.2m near the center, is 2.25 miles long within the 9.1m curve, and 0.25 mile wide; it is located N of the Roe Islands, from which it is separated by a channel 0.5 mile wide, with depths of from 24 to 37m. Its N extremity, lies 2.5 miles NNW of Mid Rock.

Sunday Islands (16° 25'S., 123° 13'E.) are two rugged islands, sparsely covered with scrub, of irregular form, and located on the same reef, 11 miles ESE of Swan Point. The E and smaller island is separated by a narrow passage, which dries at low water, and extends in a NNE and SSW direction. The N coasts of both islands, which are separated from Roe Islands by Meda Pass, are fringed by narrow coral reefs, which are wider on the E and S sides.

The westernmost Sunday Island is 56m high, 3.25 miles long, and 1.5 miles wide; the E island is 49m high, 2.5 miles long, and 0.75 mile wide. The W side of the westernmost Sunday Island is fronted by an extensive flat, on the edge of which are Allora Island and other islands, mentioned with Hadley Pass and Escape Pass.

A conspicuous boulder is located W of Waterlily Creek, on the southern side of the W island, and a similar boulder near the summit of the E island.

Tides.—At Sunday Island, the mean spring rise is 6.7m; mean neaps rise 4.9m.

Caution.—The following islets and dangers front the N, E, and S sides of the Sunday Islands:

Dean Islet, an islet 11m high, steep-to on the N side, is nearly joined to the N side of the W Sunday Island.

Hunt Islet, 5m high, with a fringing reef surrounding it, is located close to the NE point of E Sunday Island.

Rip Rock, above water, with a rock having a depth of less than 1.8m close E of it, and foul ground, marked by strong overfalls, extending 0.2 mile SE of it, is located 0.15 mile SE of Hunt Islet.

Pelican Rock, 3m high, a small rock surrounded by reefs, is separated from the S coast of East Sunday Island by a narrow boat channel.

A reef, upon which are two rocks which uncover 6 and 5m, respectively, extends 0.4 mile SE from Pelican Rock.

Lone Reef, SW of Waterlily Creek, is described with Escape Pass.

3.74 Menmuir Rock (16° 22'S., 123° 15'E.), with a depth of 3.7m, lies near the W end of a narrow ridge of rocky ground, having depths of 9 to 14.6m and marked by dangerous overfalls. It is located in the fairway of Sunday Strait, about midway between East Roe Island and Hancock Reef.

Amur Reef (16° 28'S., 123° 16'E.), of coral, steep-to, and drying 1.2m, is 0.15 mile long in a N and S direction and 150m wide, located in mid-channel, about 6 miles S of Menmuir Rock, and bearing WSW distant 4.5 miles from the S extremity of Mermaid Island.

A narrow bank, with depths of from 10.1 to 14.6m and 0.25 mile long, is situated 0.35 mile E of Amur Reef.

Alert Rock, with a depth of 2.7m, is located 1 mile SSE of Amur Reef.

Fairway Rocks (16° 35'S., 123° 19'E.), a rocky group about 1 mile in extent N and S, and 9m high, lie about 7 miles S of Amur Reef and 2 miles W of Long Island. A coral reef, that uncovers 0.9m, is located about 1.25 miles N of Fairway Rocks.

3.75 Passages in Sunday Strait.—Meda Pass (16° 22'S., 123° 10'E.) is approached from W between Alarm Shoal and Twin Islets; it leads between Anchor Shoal and Roe Islands to the N and the Sunday Islands to the S. This pass is preferred by many mariners for entering King Sound as the tide-rips are less violent than in Sunday Strait. Hadley Rock, with a depth of 9.1m, is the only danger in the pass. The tidal currents in the pass attain rates of 4 to 8 knots.

Hadley Pass (16° 25'S., 123° 09'E.), the E passage through the island chain leads between Allora Island and the reef extending from the E side of Tallon Island. It then leads W of Hancock Island where it joins with the S entrance to Escape Pass. The pass is narrow and intricate with a least width of about 0.3 mile.

Pearl Pass, connecting Karrakatta Bay with King Sound, is narrow and used by small craft with local knowledge.

Rees Islet (16° 23'S., 123° 06'E.) and Howard Islet, 2 miles W, form the N entrance of Escape Pass, which then leads SSE between Tallon Island on the E, and the reef to the W, on which Leonie and Jackson Islands lie. This pass, which is deep and not less than 0.4 mile wide, is the shortest route into King Sound from the W, but the tidal currents, which attain a rate of 10 knots during springs, require that vessels proceeding through possess local knowledge to maintain safe navigation.

King Sound

3.76 Long Island (16° 34'S., 123° 22'E.), rugged and rising to a height of 68m near its center, lies with its N extremity about 10 miles SE of the E end of Sunday Islands. An islet, 34m high, lies close off the SE extremity of Long Island, and Long Island Shoal, which dries 0.3m, parallels the island about 0.75 mile to the NE.

Cascade Bay (16° 34'S., 123° 26'E.), entered between the above islet and Lachian Island, 2.5 miles ESE, is formed between the shoal NE of Long Island and the mainland to the E. The E side of this bay is heavily encumbered with shoals,

but the N part is nearly steep-to. Depths in the entrance of the bay range from 14.6 to 29m, and from 18.3 to 37m within. Rip Reef, which dries 1.2m, lies isolated about 2 miles SSW of the W extremity of Lachian Island and must be avoided.

Anchorage.—Anchorage can be taken in the NE part of Cascade Bay out of the strength of the tidal currents, S of the E extremity of Pecked Island, at the N end of the bay. Depths in this anchorage vary from 11 to 18m, good holding ground and the tidal currents are weak and varied.

Caution.—The tidal currents in the entrance of Cascade Bay are strong with rates of 6 to 8 knots at springs. The ebb flows NW through the S entrance of the bay and forms violent eddies over the uneven ground.

3.77 Port Usborne (16° 39'S., 123° 30'E.), a small harbor, lies S of Lachian Island and NW of Point Usborne. It is fronted by Swirl Shoal, Rip Reef, and Tree Island and is difficult to enter except by small vessels with local knowledge which sometimes use it as an anchorage area. The head of the harbor is somewhat obstructed by Brolga Shoal, with a depth of 2.7m, and a large unsurveyed inlet is entered immediately NE. Rip Reef, which dries 1.2m, lies isolated about 2 miles SSW of the W extremity of Lachian Island and must be avoided.

Caution.—The tidal currents W and N of **Tree Island** (16° 40'S., 123° 29'E.) are very strong and the area is unsuitable for anchorage. Swirl Shoal, NW of Tree Island, has a least depth of 2.4m and the tidal currents form eddies over it. Towndrow Rock, which dries 0.6m, lies about 0.5 mile NE of Swirl Shoal and is dangerous.

3.78 The coast from Port Usborne trends E for 7 miles to the base of Compass Hill, 213m high, and then SE 17 miles to Stokes Bay. The first part of the coast is high and rocky, but the last is a low muddy mangrove shore, with a level track of land between it and ranges of hills, extending in a SE direction from Compass Hill. Saddle Hill, about 198m high, and Round Hill are conspicuous. A bank, with 7.3m and possibly less, lies SE, 5 miles from Usborne Point.

Helpman Islets (16° 44'S., 123° 38'E.), from 8 to 11 miles ESE of Point Usborne, are connected to the coast by a shoal ridge, which dries. A shoal, with a least known depth of 5.8m, lies 2.5 miles WSW of the NW Helpman Islet and then extends NW to the bank SE of Point Usborne.

Stokes Bay (16° 55'S., 123° 40'E.) is about 15 miles in length and 8 miles in breadth; its head is nearly dry at low water for about 7 miles and the soft muddy shores are fringed with mangroves, through which the tide flows, inundating at spring tides many miles of the interior country. The land around the bay is also low and swampy for a breadth of nearly 3 miles in places, and then rises gradually, the slope being well wooded with white gum trees.

The Meda River discharges into the SE corner of Stokes Bay, and is navigable at high water for about 15 miles for vessels of 2.7m draft.

The Robinson River is on the E shore of Stokes Bay, and traverses the valley between Saddle and Round Hills.

The May River in the S portion of Stokes Bay, 30 miles from its mouth, joins the Meda River and then takes the name of the Lennard River.

The entrances of these rivers appear to be obstructed by sandbars which probably dry at low water.

3.79 Point Torment (17° 00'S., 123° 36'E.), the W extremity of Stokes Bay, has a spit, with depths under 5.5m, extending about 6 miles NW of it; it dries out 3 miles from the point.

Point Torment Creek, a small stream 4 miles E of Point Torment, was ascended for 12 miles by boat, where it terminates in a mangrove swamp. No landing could be effected.

Aspect.—The remaining portion of the E shore of King Sound from Point Torment takes a general S direction for about 20 miles to Fitzroy River. The coast is low, irregular, lined with mangroves, and fronted by mud flats.

At 13 miles S of Point Torment there rises close to the shore a dark, wooded, conspicuous hillock, about 22m high, named Nob Hillock, and 5.5 miles farther S two similar elevations close together, named Double Nob Hillock; within the latter is the town of Derby, which is described at the end of King Sound in [paragraph 3.86](#).

3.80 Cygnet Bay (16° 34'S., 123° 01'E.) is the deep indentation between **Shenton Bluff** (16° 28'S., 123° 03'E.) and Cunningham Point, 14 miles SSE; in its N part are Lugger Cove, Mission Bay, and Catamaran Bay.

The shore is almost totally fringed with closely twining mangroves, the country behind gradually rising to an average level of 61m, thickly covered with various kinds of gum trees.

Gilbert Rock (16° 29'S., 123° 03'E.), 2.4m high, is a small rock located 0.6 mile S of Shenton Bluff, with which it is connected by a rocky ledge.

A sand patch, which dries 6.5m on the same reef, is located 0.2 mile W of Gilbert Rock.

Reefs and foul ground extend 0.5 mile W of Gilbert Rock, near the W extremity of which there is a rock which dries 2.4m. Within the 30m curve the bottom is foul.

Newman Ledge is a reef 0.2 mile long in a N-S direction which dries 2.4m, and is located 0.8 mile E of Gilbert Rock.

Shoal water surrounds Newman Ledge to a distance of about 0.35 mile, and a rock, drying 3m, is located midway between it and Gilbert Rock.

Lugger Cove (16° 28'S., 123° 02'E.), located W of Shenton Bluff, is encumbered by a sand flat fringed with coral reefs extending from the head.

Riddel Point, the W point of Lugger Cove, is 20m high and faced by cliffs; a reef extends 0.2 mile from this point.

Bird Rocks are a group of small rocks, from 3 to 7.3m high, located on the outer part of the shore reef about 1.5 miles SSW of Riddel Point.

Anchorage.—Good anchorage, in a depth of 7.3m sand bottom, is found in Lugger Cove with Shenton Bluff bearing 107°, about 0.9 mile distant, avoiding a rocky spit of 0.6m which extends about 0.5 mile W from that bluff.

Between Riddel Point and Bird Rocks the coast recedes and forms two shallow bays, N of which is Mission Bay, where there is a house belonging to the Roman Catholic Mission; the S bay is Catamaran Bay.

3.81 Skeleton Point (16° 32'S., 123° 01'E.), 38m high, is a narrow point located about 4 miles SW of Shenton Bluff. It is fringed by reef, and rocky ledges, on which are rocks 0.6m high, extending from the NE and SE ends of the point.

Shell Bank (16° 30'S., 123° 06'E.), with general depths of from 11 to 14.6m, sand and coral bottom, and from 0.5 mile to 1 mile wide within the 18.3m curve, has been traced for a distance of 6 miles in a SW direction from a position 0.75 mile SW of Evans Rocks to the entrance to Escape Pass. The least known depth is 7.6m, located about 4.5 miles ENE of Skeleton Point; a patch of 8.2m lies 1.5 miles NE of this position.

Cunningham Point (16° 41'S., 123° 08'E.), the S extremity of Cygnet Bay, is a steep, rocky cliff, connected with the mainland by a low, narrow isthmus, covered at springs. A rocky ledge, which dries 3m, lies close N of the point, and shoal water borders the shore to a distance of 1 mile E of the point.

Meda Shoal (16° 35'S., 123° 07'E.), awash at low water and about 1 mile in diameter, lies 6 miles N of Cunningham Point. The waters around Meda Shoal have not been completely surveyed, but numerous shoals are known to exist within a radius of 4.5 miles to the N, W, and S.

Anchorage.—Most of the smaller bays in Cygnet Bay afford good anchorage for vessels with local knowledge in depths of 7 to 9m between 0.5 mile and 2 miles offshore and out of the strength of the tidal currents. Caution is required in the approach as the waters of Cygnet Bay have not been thoroughly surveyed and additional dangers may exist.

The best anchorage for small vessels is in the bay immediately W of Cunningham Point in depths of 4 to 5m, but care is required on approaching to avoid the shoals between the above point and Meda Shoal.

3.82 Carlisle Head (16° 45'S., 123° 08'E.), 2.75 miles S of Cunningham Point, is a conspicuous cliff, between which and the latter point, the coastal bank dries for about 0.5 mile offshore, with three rocks on its outer edge.

A narrow shoal, about 3.5 miles in length and which just dries at low water springs, lies centered about 2.5 miles E of Carlisle Head.

Foul Point (16° 48'S., 123° 09'E.), fronted S by a reef to a distance of about 1 mile, falls in conspicuous cliffs; it also marks the S termination of the range of cliffs on the W side of King Sound.

Goodenough Bay lies between Carlisle Head and Foul Point, and is dry throughout at low water, and foul to some distance beyond the points.

Disaster Bay (16° 54'S., 123° 11'E.), entered between Cornambie Point and Repulse Point about 8 miles SSE, mostly dries and is foul with reefs and shoals. There are some conspicuous red cliffs at the head of the bay, about 2 miles SW of Cornambie Point. A long narrow shoal composed of coarse sand and gravel, which dries 2.1m, extends approximately 7.5 miles N of Repulse Point and forms a natural breakwater fronting Disaster Bay.

Anchorage can be taken, in depths of 9 to 15m, within the above shoal and the shoal flats off Disaster Bay.

3.83 South Meda Shoal (16° 54'S., 123° 17'E.), 5 miles NE of Repulse Point, has a least depth of 0.3m, coarse sand, with depths of less than 11m extending 0.75 mile N and up to 1.5 miles SSE from its shallowest part.

Tides—Cur rents.—At spring tides there are extensive eddies and overfalls over all the shoal areas in King Sound and in other areas of irregular depths. In strong winds dangerous tide-rips occur in the vicinity of most of the projecting points along the shore of the sound, and discolored water is frequently observed in the approaches to Fitzroy River during the spring ebbs.

Spring rates of 5 knots are frequent throughout the fairway in the S part of King Sound.

Valentine Islet (17° 05'S., 123° 19'E.), 26m high, with cliffs at both ends and a low valley between, lies on the edge of the shorebank about 8 miles SSE of Repulse Point. A conspicuous white sandy patch, 24m high, is located on the coast 4 miles NW of Valentine Islet.

Estuary of the Fitzroy River

3.84 The Fitzroy River (16° 15'S., 123° 53'E.) flows into the head of King Sound and forms a rather extensive but shoal estuary which is entered between **Point Torment** (17° 00'S., 123° 36'E.) and Valentine Island, 15 miles W. The E side of the estuary, between the above point and the river entrance, approximately 20 miles S, is low, irregular, and lined with mangroves fronted by mud flats. Black Rocks, a group of drying reefs and submerged rocks, lie within 1.5 miles of the coast about 3 miles S of Point Torment.

A light is shown, at an elevation of 13m, from a position close off the coast 3 miles S of Point Torment.

Christine Point (17° 12'S., 123° 17'E.), 10 miles S of Point Torment, is low and swampy; two inlets enter the coast immediately E of the point, and a spit, with depths of less than 5.5m, extends nearly 7 miles NW of the same point.

3.85 Nob Hillock (17° 16'S., 123° 37'E.) stands close to the coast about 4 miles S of Christine Point; Double Nob Hillock is located about 5.5 miles farther S.

The W side of the estuary S of Valentine Islet is low, marshy, and poorly defined. The coast is backed by timbered country, but the waters on the W side of the estuary are nearly unsurveyed.

Caution.—Numerous shoals and dangers lie within the entrance to the estuary of Fitzroy River and local knowledge is essential to enter. An isolated patch, with a depth of 5.2m, lies 4.5 miles W of Point Torment.

Outer Rip Shoal (17° 06'S., 123° 31'E.), which dries 2.1m, is located 6 miles SW of Point Torment, and depths of less than 5.5m extend 0.75 mile NNW and SSE of its drying part.

Inner Rip Shoal, which dries 2.1m, is located 9 miles SSW of Point Torment; depths of less than 5.5m extend 1.5 miles

NW of the drying portion of this reef, and the SE extremity is nearly connected to the coastal bank.

Elbow Shoal, with general depths of from 1.8 to 3.7m and on which there is a bank which dries 1.8m, extends 4 miles NW and W of Christine Points.

North Mary Islet (17° 16'S., 123° 33'E.), lies 4 miles W of Nob Hillock and is about 11m high to the tops of the trees. The N end of the mangrove-covered flat extending from this islet is known as Josephine Point.

South Mary Islet, 0.75 mile S of North Mary Island, is 5m high and covered with mangroves which nearly connect it to the latter. There are numerous shoal flats, several of which are covered with mangroves, that extend SW from South Mary Islet to the W shore of the estuary.

3.86 Derby (17° 18'S., 123° 36'E.) ([World Port Index No. 54640](#)), a small port near the head of King Sound, is the capital of the West Kimberly District and was a shipment area for pastoral and mineral produce. The port is reported closed to commercial shipping; all cargo was being handled through Broome ([see paragraph 4.11](#)).

Anchorage.—There is anchorage for vessels in 11 to 12.8m with Black Rock light structure bearing 090°, distant 4 miles. Anchorage is also available in depths of 7.3 to 9.1m, NNW of North Mary Island, with the front range light bearing 141°, distant 6.5 miles. Small vessels can anchor just NE of the same islet in depths of 5.5 to 7.3m.

Directions.—Vessels should proceed through Sunday Strait passing about 0.5 mile E of East Roe Island and 0.75 mile E of East Sunday Island thereby avoiding Menmuir Rock. When at a position about 2.75 miles SW of Amur Reef, steer 157° for about 28 miles passing W of Fairway Rocks to a position with Black Rock Light bearing 135°, distance 14 miles. Steer for the light structure until about 4 miles from it, then proceed to the anchorage. The approach is subject to constant change.

King Sound to Cape Leveque

3.87 The coast between Swan Point, the W entrance point of King Sound, and Cape Leveque about 7 miles WSW, is low and sandy, and fronted by coral ledges and sandflats extending up to 1.5 miles offshore.

Hunter Creek (16° 23'S., 122° 59'E.), about 3.5 miles SW of Swan Point, dries, but can be entered by local craft with local knowledge at high water when there are depths of about 5m over the bar. Between the creek and Cape Leveque, about 3.5 miles WSW, there is a bay entirely obstructed by a reef known as Jonas Shoal. There are some red sandhills, 34m high, at the head of the bay.

Cape Leveque (16° 23'S., 122° 56'E.) is a red cliffy point about 37m high. Reefs, on which Leveque Islet is located, extend 1 mile N and 0.6 mile W of the cape. A light is shown from the cape and a racon is situated at the light structure. Ball Rock, with a depth of 3m, is located about 0.5 mile N of Leveque Islet.